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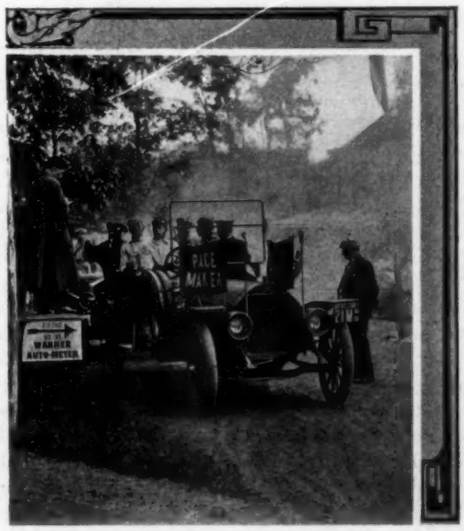
THE AUTOMOBILE

A CONTEST TOUR WHICH EMBRACED FOUR STATES

By W. McK. White.

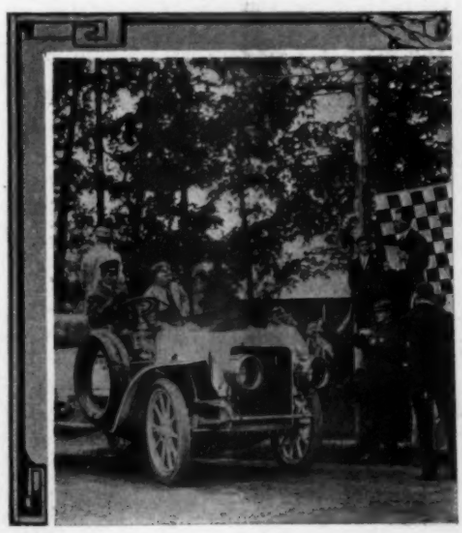
IDEAL touring conditions—fascinating scenery, magnificent roads, nearly perfect weather—and an endurance contest in which a dozen of seventeen starters finished with perfect scores were experienced by those who participated in the "week-end" tour of the New York Automobile Trade Association. Leaving the busy city on Saturday morning for Catskill, thence to the Berkshire Hills on Sunday, and a run from Pittsfield to the metropolis on Monday, gave a route replete with scenic grandeur, and on such splendid highways as to mark this 350-mile trip as one of coming wide popularity. Ramapo Hills, Catskill Mountains and the far-famed Berkshires, interspersed with glimpses of the Hudson and other rivers, can furnish more beautiful vistas than will be found within a short radius of any other large city. The contesting nature of the tour introduced a spiciness which lent particular interest, and the rules were not so rigorous as to detract from the pleasures of leisurely traveling—a really delightful combination.

White, Franklin, National, Knox, Franklin again, Oldsmobile, Columbia, Mitchell three times, Interstate and Thomas taxicab were the makes which traveled the 351.2 miles on a time schedule with checking stations at frequent intervals, without being late or having to make adjustments on the roads. Stevens-Duryea, Stoddard - Dayton, and Mitchell were penalized, and Stoddard-Dayton and Standard withdrew, but continued as non-contestants. The one free-lance of the party was a Lancia. The automobiles which were penalized or withdrew were the victims of slight derangements, which would be overlooked in ordinary touring, or perhaps prevented, but which in a contest caused a disturbance. Only one serious mishap occurred, and that was to a touring car making its début in the metropolitan trade circles, the Standard, a production of the Standard Roller Bearing Company in Philadelphia. In rounding a corner in Kingston, N. Y., the car skidded and broke a wheel against a curb. A new one was sent all the way from the Quaker City and the car joined the contestants at Catskill on Sunday morning, and ran on schedule to the finish.



Fuel Is Always Necessary

The big six-cylinder Stevens-Duryea ran out of gasoline just as it was about to cross the line at Catskill, and after it stood at the checking station for twenty minutes with its motor running. It took some time to procure gasoline and 14 points were thereby rung up on the finish judge's register. A. H. Whiting's Stoddard-Dayton broke a gasoline feed pipe and after fixing this and securing a fresh supply of the valuable liquid, the car was so late that its entrant decided to withdraw and run as a non-contestant on the last day. The Stoddard-Dayton entered and driven by R. T. Newton had to break a seal for a carbureter adjustment, at a cost



of 6 points, and O. R. DeLamater on the second and third days stopped to renew his supply of gasoline and water outside of the controls. His penalty on the second day was 23 points, and on the last was 20 points, a total of 43. The rules allowed renewal of fuel only at checking stations.

As was forecasted by those who had been over the route, the tourists were greatly pleased and impressed by the wonderful scenery. The party formed at Columbus Circle on Saturday morning under a blue sky and a bright sun predicting fine weather, and with police escort, proceeded down Broadway to Forty-second street, thence to the Weehawken ferry. On the heights above the Hudson the cars drew up in line, and a few minutes after 9 o'clock the Stevens-Duryea, driven alternately by Frank Eveland, of New York, and his son, F. W. Eveland, of Philadelphia, was sent away, acting as a contesting pacemaker. The Columbia touring car, which carried checkers, was also a contestant, and as a rule checked out of the controls some time earlier than the body of the tour, and finished in the same relation.

Hardly more than a few miles out of Weehawken the beautiful views came into evidence. Suffern was the first checking station, 28.3 miles from the start, with a schedule of 1 hour 50 minutes, and the roads as fine as the best in the world. Hard and smooth highways, in many places oiled, were conducive to enhancing the pleasure of the run through the Ramapo hills, considered by some as more beautiful than the Berkshires. A second control furnished equally grand roads and views to Highland Mills, and then a detour was made to the Lake View Hotel for lunch. There occurred something here which reminded those of the tourists who have been in Gliddens and other long trips of the rush when a route has to be altered. R. H. Johnston had laid out the directions, but since his trip part of the State road into the hotel had been torn up, and three-eighths of a mile in the route book lengthened into three miles of roads that turned and twisted every hundred yards. Consequently, many drivers discovered that they had but a few minutes, and the way they came rushing into the control was far different from the quiet pace held throughout the remainder of the trip. None was late, for a wonder, but it was a close shave for many.

After a stop of an hour and a quarter the party proceeded toward the next checking station, at Highland, regretting that they did not have more of the beauties of the country around Suffern, Tuxedo Park and Arden, but looking forward to the Catskills. Newburgh was on the route, but no stop was made, although the reception accorded the travelers was as hearty there as at all places. From that city the road lay along the bank of the Hudson, and with the afternoon sun shining upon the eastern shores there were many places where the beauties of nature and of the mansions across the river caused the drivers to run very slowly. From Kingston the cars ran through Esopus, wound for seven miles to go one mile into Kingston, and stopped for the night at the Grant House on the outskirts of Catskill. The run of the day had been 125.2 miles in length, and the running time was seven and a quarter hours.

An innovation in a tour of the kind was introduced by giving over Sunday morning to the tourists, for runs back into the mountains or for a quiet rest. Each day as soon as the cars were checked into the night control and a count of the seals upon the bonnets was made, the drivers were free to use them as they liked. At Catskill several of the cars made short runs, and one fishing party was organized by Senator W. J. Morgan. The party was a success, although the fish were not. After dinner the comparatively short run to the Berkshires was commenced. The distance was 74.4 miles to the Hotel Wendell at Pittsfield, and the time schedule was four and three-quarter hours, with one intermediate stop at Albany. The first had

Peekskill Was a Typical Stopping Place on the Tour

roads of the trip were found between Athens and Ravena, 17 miles, and they were very rough, but only caused the contestants to go slowly. Soon after leaving the State capital the Berkshire hills came into view and the splendid roads wound up and down through the verdure-clad valleys right to the city. A light rain commenced before reaching Albany so that at that city tops were raised and rain garments donned. It was well that the opportunity was taken there, for the farther the cars went the harder the rain seemed to come down, and by the time Pittsfield was sighted it was very heavy. A number of the contestants had taken their wives upon the run, and a dinner party was formed on Sunday evening in the Wendell.

Monday's route was the longest, 151.6 miles, and the interest was just as great as on the previous days, for the route led through places which are known all over the country for their beauty: Lenox, Stockbridge, Great Barrington, Sharon and the Hudson river shores from Poughkeepsie to Yonkers. The rain clouds had cleared away and the day was the clearest of the trio, a fact that was greatly appreciated in going through the hills of western Massachusetts and Connecticut. As was expressed, the country appeared in the morning as if it had been carefully combed and groomed, the flowers were in full bloom, and the dampness of the previous day had given full grandeur to the entire scene. A run of 46.6 miles to Sharon was the first of the programme, and so well did the tourists like

Committee Which Successfully Carried Out the Run

Fair Ones Who Gave Committee Needed Assistance

the views on the route that they took it very slowly, the highways being wonderfully smooth and hard, only a few stretches around road-building operations giving slight roughness. From the quaint town of Sharon, with its clock tower, wide and shady lawns and hospitable inn, to Poughkeepsie, was a little over 30 miles, and in the city on the Hudson a stop was taken for lunch. At Cold Spring the first views of the river were seen, and the roads from Poughkeepsie to Peekskill were none too good, in fact the poorest of the trip; but the views around the Storm King mountains were worth the roughness. The drivers, however, had to do some fast running at the finish of the control, for many of them had taken matters too leisurely at the beginning, not expecting to be held down near the finish, and the result was that when the worst of the roads were met with the time did not allow of taking them slowly. All reported on schedule time.

From Peekskill to Yonkers was a quiet parade along the banks of the river, with wide views often seen from the heights, while underneath the roads were as fine as could be desired. From Yonkers into this city was of necessity an easy run, and all were so far ahead of time that no speeding was apparent, and the bicycle police rode alongside asking their acquaintances in the trade as to the pleasures of the route. As the contestants arrived at the Automobile Club of America they were immediately checked out, their seals examined and the cars and drivers released without waiting for the time schedule.

This circuit has been known to many autoists, but perhaps to not as many as might conveniently make the trip, and it is due to become equally as popular as the more generally used tours into New England. The fact that there were nine women passengers shows that it is easy, and they all expressed themselves as greatly pleased, and not at all tired. They were: Mrs. Harry Fosdick, Mrs. R. T. Newton, Mrs. A. J. Interreiden, Mrs. W. C. Poertner, Mrs. C. H. Larson, Mrs. W. R. Lee, Mrs. W. A. Krohn, Mrs. Marcus Allen, Mrs. L. C. Van Bever.

The cars themselves made the run in splendid order; there was very little tire trouble, perhaps not more than three or four changes; almost no stops for adjustments as the score shows; few cases of overheating, and the fact that eighteen cars, including Harry Fosdick's free-lance Lancia, can go through a 351-mile run without stopping, and the motors had to be kept running at all times except at the noon control, speaks well for the reliability of them. The little Thomas taxicab kept plugging along consistently and steadily, a remarkable performance for such a small car with a large body, and the crowd was frequently interested in seeing how much charges were rung up on its taximeter. Jones Speedometer and Warner Autometer Companies had sent out cars ahead of the tourists, and they marked the route with arrows, and on several detours the Warner signs were used instead of the route book. The big Oldsmobile with its 42-inch wheels, the same car which has taken part in many other contests around Philadelphia and won the run of the Norristown club, was driven by Fred Folberth of the Olds factory, and attracted considerable attention. Hal K. Sheridan had a White close-coupled tourabout, and as is the practice of the White drivers in contests, kept well to the rear, out of the dust, and drove to see the country rather than to have long waits in hot controls. The White showed its speed, however, when it was necessary to go three miles in 10 minutes over crooked roads into the Lake View hotel on Saturday. Two Franklin cars, a four and a six, represented the air-coolers, and as usual had no trouble from that or any other score, both carrying heavy loads. The big Stevens-Duryea took the palm, however, for the number of passengers, as it had its seven seats occupied at all times. The National car was a low, rakish, yellow roadster and it

Where the Road Was Picturesquely Narrow

Right in the Heart of the Catskill Country

SUMMARY OF THE NEW YORK AUTOMOBILE TRADE ASSOCIATION TOUR

CLASS F—CARS SELLING FOR $4,001 AND OVER

No.	Car	H.P.	Cyl.	Bore	Stroke	Entrant	Driver	Penalties Time	Penalties Road	Total	Tires
21	Oldsmobile	60	6	4¾	4¾	Oldsmobile Co. of New York	F. G. Folberth	0	0	Perfect	Goodrich.

CLASS E—CARS SELLING FOR $3,001 TO $4,000

14	White	40	..	...	...	The White Co.	H. K. Sheridan	0	0	Perfect	Diamond.
15	Franklin	42	6	4¼	4	Franklin Auto Co.	Chas. Fox	0	0	Perfect	Goodrich.
18	Stevens-Duryea	40	6	4¾	4½	Frank Eveland	Frank Eveland	14	0	14	Diamond.

CLASS D—CARS SELLING FOR $2,001 TO $3,000

3	National	35	4	4¾	4¾	Poertner Motor Car Co.	W. C. Poertner	0	0	Perfect	Diamond.
7	Columbia	29	4	4¼	4½	Victor Auto Storage Co.	J. R. Kirkpatrick	0	0	Perfect	Empire.
9	Franklin	28	4	4¼	4	Franklin Auto Co.	J. L. Burns	0	0	Perfect	Goodrich.
10	Knox	38	4	4⅜	4¾	Fisk Rubber Co. of New York	J. R. Ripley	0	0	Perfect	Fisk.
2	Stoddard-Dayton	40-45	4	4¾	5	Atlantic Motor Car Co.	R. T. Newton	0	6	6	Firestone.
1	Mitchell	40	4	4¾	5	Mitchell Motor Co.	O. R. DeLamater	0	43	43	Hartford.
8	Stoddard-Dayton	40-45	4	4¾	5	Atlantic Motor Car Co.	A. H. Whiting	Withdrew		Withdrew	Firestone.

CLASS C—CARS SELLING FOR $1,251 TO $2,000

5	Mitchell	30	4	4¼	4½	Mitchell Motor Co.	D. M. Hasbrouck	0	0	Perfect	Goodyear.
6	Mitchell	30	4	4¼	4½	Mitchell Motor Co.	M. E. Parrott	0	0	Perfect	Hartford.
11	Mitchell	30	4	4¼	4½	Mitchell Motor Co.	W. D. Brown	0	0	Perfect	Hartford.
12	Interstate	35	4	4¼	5	Doolittle Rim Co.	H. H. Knepper	0	0	Perfect	Diamond.
22	Standard	30	4	4¼	4½	Standard Roller Bearing Co.	C. R. Short	Withdrew		Withdrew	Diamond.

CLASS G—TAXICABS CARRYING TWO PASSENGERS AND DRIVER

20	Thomas	18	4	3⅜	4 5/16	Parkway Garage Co.	Oscar Housen	0	0	Perfect	Empire.

created a favorable comment all along, not only because of its lines and novel color scheme, but also because of its steady running and quiet motor. The Mitchell was best represented in number, for there were four of this make and the three of 30-horsepower size all made perfect scores. The two Stoddard-Dayton suffered rather severely for the nature of their troubles, and, aside from the momentary adjustments necessary, ran splendidly. At one time the crowd around the checking station through that Mr. Newton had stopped his motor, when in reality it was only throttled down and running very quietly. A rock struck the gasoline feed pipe on Mr. Whiting's car, causing it to break. The Knox car entered by the New York Fisk branch was one of the perfect score contenders, as was also the Interstate driven by Harry Knepper.

FIVE BATTLING IN QUAKER ENDURANCE RUN

WILLIAMSPORT, PA., June 14—With a beggarly array of five starters, the Quaker City Motor Club this morning launched its five-day endurance run to Pittsburg and return. Various reasons have been given for the paucity of entries—lack of cars, preparations for 1910, etc.—but the fact remains that this territory has had a surfeit of endurance and reliability runs for this season, and the Quakers made the mistake of scheduling their run too late in the season; or, failing to secure an earlier date, of not calling the run off altogether. It is going to cost them something like $1,200 to see the affair through, and, like true sports, they are going to do it.

To-day's story is soon told. Shuttleworth, with a 40-horsepower Haynes, the only class C entry, snapped a front axle at Lavelle, 75 miles short of the overnight stop, and under ordinary conditions would have retired. But Shuttleworth is after the cup, and wired to New York for a new axle.

The Palmer & Singer covered the last 25 miles of to-day's run with two broken front springs, but by means of a first-aid repair got into the control on time.

The Franklin and the Elmore—the latter driven by Frank Hardart, Jr., the only amateur driver in the run—finished clean for the day in their class, as did Walter Cram's Mitchell 20 in class D. The going was horrible through the mountains, as a result of the incessant rains of last week, and the reduction of the running time to 18 miles an hour was much appreciated by the drivers. Seventy-five of the 191.2 miles of to-day's run was over and through the successive ranges of the Blue mountains which form the backbone of the Keystone State between the Delaware and the Susquehanna.

Pilot "Doc" Overpeck, who is acting as referee in the absence of Chairman Ross of the contest committee (who was called out of town), was compelled to transfer his flag to the Palmer & Singer, a troublesome clutch delaying the official Chalmers-Detroit, and it was overtaken by the former at Sunbury.

JOHNSTOWN, PA., June 15—The 18-mile-an-hour schedule obtained again to-day, and with the large proportion of low-gear work due to the mountains and the heavy going in many places the reduction came in quite handy. Although four of the five cars finished clean, none of them had much time to spare.

The surprise of the day was the appearance in Williamsport at 6 a. m. of the Haynes, which suffered a broken axle 75 miles shy of that place. Driver Shuttleworth and his assistant, with the aid of a fence rail and a little ingenuity, managed to get their car to Ashland, where a new axle, wired for to New York, reached them at 11 o'clock at night. They were back on the course again at 1 o'clock this morning, and reached Williamport in time to get a bite of breakfast before checking out.

There were some delay in the arrival of new springs for the Palmer & Singer, which limped into Williamsport yesterday with both front springs gone, and the car did not check out from that place till 8.45 this morning. By taking all sorts of chances and pushing through with but one three-minute stop for fuel, the car arrived here 6 minutes ahead of its schedule, and the performance is the talk of all Johnstown, where the character of the going along the route is well known.

The only car to suffer a penalty to-day was the Haynes. Yesterday's experience made Driver Shuttleworth a trifle too careful, and he failed to allow sufficient time for the mountain work between Altoona and this place; he checked in 15 minutes late. He is determined to land the class C cup, and as the Haynes is the only car in that class, he says he will not mind the addition of a few extra points to the large total accumulated yesterday.

Following is a list of the participants:

CLASS A

No.	Car	H.P.	Cyl.	Driver	Penalties Time	Penalties Work	Penalties Total
5	Elmore	35	4	Hardart, Jr.	0	0	0
13	Franklin	42	6	Carris	0	0	0
1	Palmer & Singer.	60	6	Wallace, Jr.	0	Incom.	Incom.

CLASS C

4	Haynes	40		Shuttleworth	Broken front axle		Incom.

CLASS D

6	Mitchell	20	4	Cram	0	0	0

NEW YORK, June 14—Twenty-five automobiles—all of them of one make, Maxwells—started from this city this morning on an eight-day tour, the first of such length and with but one kind of auto ever arranged. It is the annual tour of the Maxwell-Briscoe Motor Club and it includes on its route some of the most picturesque scenery in five States, New York, Connecticut, Massachusetts, New Jersey, and Pennsylvania. The party left the city in time to visit the Maxwell factory at Tarrytown and lunch was served there by the factory officials. Nearly all of the cars are privately owned ones and only the official machines are supplied by the makers. From Tarrytown the course leads to Waterbury, Conn., where the first night stop will be made. To-morrow there will be a leisurely tour through the Berkshires, stopping at Stockbridge. The third stage will carry the Maxwellites over into Pennsylvania, via Port Jervis, thence to the Delaware Water Gap, Philadelphia, Atlantic City, and back to New York. Next Sunday will be spent at Atlantic City, returning via Lakewood. A handsome trophy has been offered and it is for this that there will be competition.

WOMEN'S TOUR FROM COAST TO COAST

Transcontinental automobile touring is receiving another good impetus through the trip of Mrs. Alice R. Ramsey and three other women, who are en route in a Maxwell touring car. Fully equipped for a long journey, with camping outfit, shovels, and even firearms, the notable quartette left New York on the morning of June 9, during a drizzling rain, which neither dampened their spirits nor the intention of trying to reach Albany on that day. With Mrs. Ramsey, who is president of the Women's Motoring Club, of New York, are Miss H. Jahns, Mrs. W. Atwood, and Mrs. N. R. Powell, all of Hackensack, N. J., and it is their intention to do all of their own work on the way, thus being the first women to make the trip from ocean to ocean unassisted by mere man. Mrs. Ramsey intends to do the driving, although her companions are capable of taking the wheel if necessary. The route selected is that most generally used between the coasts: Albany, Buffalo, Cleveland, Chicago, Omaha, Cheyenne, Ogden and Reno. No speed will be attempted, but the party expressed the hope of reaching the Pacific Coast by the middle of July, and perhaps a few days earlier.

Plans have been made to stop in cities and towns at night, but if that is not possible at any point, the camping outfit will be called into use, including its cooking utensiles, for a supply of food and water will be carried while crossing the plains. The firearms, Mrs. Ramsey explained, "are to scare away any over-curious wild animals," and the shovels and axes for emergency use. After reaching San Francisco the women expect to tour in the southern part of the State.

SHAWMUT LEADS IN OCEAN-TO-OCEAN RACE

RAWLINS, WYO., June 15—In the heart of the Rocky mountains the automobiles participating in the endurance contest from New York to Seattle are experiencing great difficulties. The roads have been very bad ever since the cars entered Kansas and the fortunes of the race have caused each car at times to be the leader, and at times the last. The Shawmut is leading at present, having left this place at noon, and the two Fords left together at 4.45 p. m. The Acme has not as yet reached Cheyenne. On last Thursday the contestants were at Ellis, Kan., where the Acme led, with the two Fords together, and then the Shawmut, all close together, but the Shawmut took second place by leaving ahead of the small cars. At Limon, Col., on Saturday the Shawmut was leading, with Ford No. 2, and Ford No. 1, in the order named. The Acme had to stop at Oakley, Kan., but followed the others after several hours delay. Cheyenne on Sunday reported that the Ford No. 2 was the first to arrive, followed in a few minutes by the Shawmut, with the Ford No. 1 in Denver, and on the same day the Itala was struck by a freight train on a bridge at Marshall, Mo., but was not badly damaged.

Yesterday the Shawmut took the lead by reaching Laramie first, and the two Fords joined forces at Cheyenne and proceeded. The Acme reached Denver. Last night the Shawmut was held up at the Union Pacific bridge over the Platte river at Fort Steele because it did not have a permit to cross, and it had to spend the night there. The Ford drivers, however, had secured the passes in Cheyenne and No. 2 crossed, thus taking the lead and stopping here for the night. No. 1 reached here at 10 o'clock this morning, just as the Shawmut received permission to cross the bridge. The Ford No. 2 started from Rawlins early to-day, but something broke about six miles out and it was brought back. When the Ford No. 1 arrived it had a badly crippled wheel, having broken it on the bridge. The Shawmut thus caught up and passed, and was reported at Wamsutter, 40 miles west, just as the Fords left here. The last reported of the Acme was that it was in a mud hole south of Cheyenne.

MERIDEN WILL HAVE A HILL CLIMB

MERIDEN, CONN., June 14—A hill climbing contest which will be open for amateurs only will be held by the Meriden Automobile Association on June 26. Considerable rivalry has arisen as to the abilities of the cars owned by some of the members and the entry list has been filling rapidly. The machines will be classed by piston displacement instead of price, and there will be seven events, as follows: Displacement of 160 cubic inches or under; 161 to 230 cubic inches; 231 to 300; 301 to 450; free-for-all; single-cylinder motorcycles; and two-cylinder motorcycles. Mayor Reilly and other city officials will preside.

CLIMBING A HILL CALLED "DEAD HORSE"

Thousands came early and climbed

Cameron, twice winner with Chalmers-Detroit.

WORCESTER, MASS., June 12—"Dead Horse" Hill is the name of an incline that is known throughout the country because of its unusual cognomen. Many a horse was "dead" by the time he reached its highest part, though there are other grades in the "Old Bay" State which call for more endurance and persistence. "Dead Horse" has had its surface improved in recent years, along with many other miles of good highway in Massachusetts, and consequently its climbing no longer presents any terrors even for the harnessed animal.

Steam had its innings to-day, for the craft piloted by L. F. N. Baldwin made the ascent in 54 seconds flat, which was an improvement of 1 3-5 seconds over his time of a year ago. Again, in the "record-of-the-hill" event, the steamer scored in .55 3-5, and Baldwin might have done even better had he so desired.

Baldwin to-night made the public statement that he would never drive again, due to the wishes of his wife, who has convinced him that the risk is too great for the honors to be gained.

The best time made by a gasoline car was in the "record-of-the-hill" event, when H. F. Grant, in the Alco, formerly the Berliet, made the ascent in 1.03 4-5.

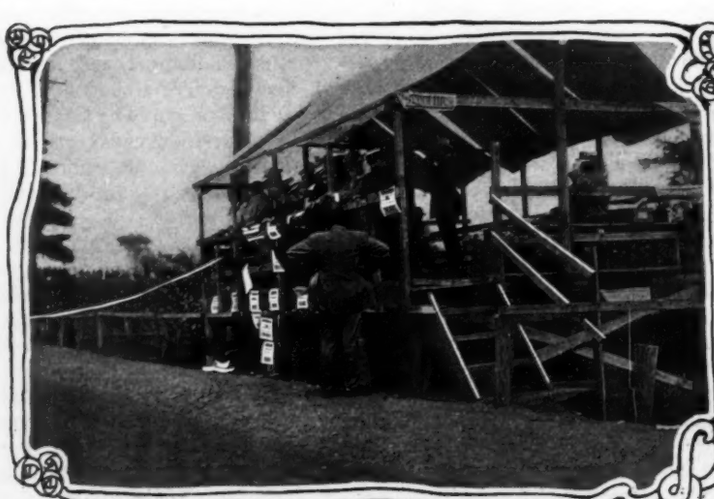
The Benz car, with David Bruce Brown driving, came to grief the night before the climb in trying out the hill. Brown was making the hill at a 50-second clip when he met a lightweight Stanley coming in the opposite direction.

This morning William Bourke, in his racing Knox, went into the gutter on the same section of the hill where Brown and the Benz went to the bad, and the Knox was smashed beyond repair and Bourke had to be taken to a physician.

It is to the credit of the Worcester Automobile Club, particularly of John P. Coughlin, its president, that the climb was run off in less than two hours. The time of running the events was 1 hour and 47 minutes, and this was due to Fred J. Wagner, the starter, who insisted that a car be off every two minutes.

Prominent autoists from all over New England were present, the honorary referee being President L. R. Speare, of the American Automobile Association. The acting referee was Samuel B. Stevens, who was recently appointed a member of the A. A. A. board.

A contingent from Lowell included Mayor Brown, Secretary McKennna of the board of trade, Senator Hibbard, and Thomas Lee, all being guests of President J. O. Heinze, of the Lowell Automobile Club. The following is the summary:



Where the Timers were "Cooped"

Burnham scored with Simplex.

LOCATED IN THE "OLD BAY STATE"

And the "Cops" marched up hill.

Baldwin who "steamed" to victory.

FREE-FOR-ALL, GASOLINE CARS WITH DISPLACEMENT OF 451 TO 600 CUBIC INCHES

Pos.	Car	H.P.	Driver	Time
1	Alco	54.1	Harry F. Grant	1:03 4-5
2	Allen Kingston	48.4	H. Hughes	1:07 4-5
3	Allen Kingston	48	C. A. Glenworth	1:14

FREE-FOR-ALL, GASOLINE CARS WITH PISTON DISPLACEMENT NOT TO EXCEED 350 CUBIC INCHES

1	Columbia	32.4	J. J. Coffery	1:08 4-5
2	Buick	32.4	J. B. Ryall	1:22 1-5

FREE-FOR-ALL, CARS OF ALL TYPES AND MOTIVE POWERS

1	Stanley		L. F. N. Baldwin	0:54
2	Alco	54.1	Harry F. Grant	1:06
3	Chalmers-Detroit	40	L. B. Lorimer	1:11

AMATEUR, CARS OF ALL TYPES AND MOTIVE POWER

1	Buick	32.4	J. B. Ryall	1:25 4-5
2	Chalmers-Detroit	40	C. S. Hall	1:44

GASOLINE CARS WITH PISTON DISPLACEMENT OF 451 TO 600 CUBIC INCHES; MINIMUM WEIGHT, 2,400 POUNDS

1	Allen Kingston	48.4	Hugh Hughes	1:09 2-5
2	Allen Kingston	48	C. A. Glenworth	1:16

GASOLINE CARS WITH PISTON DISPLACEMENT OF 301 TO 450 CUBIC INCHES; MINIMUM WEIGHT, 2,100 POUNDS

1	Chalmers-Detroit	40	L. F. Cameron	1:19
2	Chalmers-Detroit	40	L. B. Lorimer	1:20
3	Buick	32.4	J. B. Ryall	1:22 2-5

GASOLNE CARS WITH PISTON DISPLACEMENT OF 160 CUBIC INCHES AND UNDER; MINIMUM WEIGHT, 1,200 POUNDS

1	Buick	19.64	J. B. Ryall	2:05 1-5

GASOLINE STOCK CARS SELLING FOR $4,001 AND OVER

1	Simplex	60	F. K. Burnham	1:08 1-5

GASOLINE STOCK CARS SELLING FROM $3,001 TO $4,000

1	Allen Kingston	48.4	H. Hughes	1:10
2	Allen Kingston	48	C. A. Glenworth	1:16 2-5

GASOLINE STOCK CARS SELLING FROM $2,001 TO $3,000

1	Chalmers-Detroit	40	F. F. Cameron	1:14 4-5
2	Atlas	43.5	Elmore Knox	1:22 4-5
3	Chalmers-Detroit	40	L. B. Lorimer	1:26

GASOLINE STOCK CARS SELLING FROM $1,251 TO $2,000

1	Buick	32.4	J. B. Ryall	1:22 4-5
2	Jackson	36.1	H. M. Bates	1:27 2-5
3	Cameron	36.3	A. Cameron	1:36 3-5

GASOLINE STOCK CARS SELLING FROM $851 TO $1,250

1	Buick	22.5	C. M. Stanley	1:49
2	Buick	22.5	J. B. Ryall	1:54 1-5
3	Cameron	24.2	A. Cameron	2:06 2-5

WORCESTER COUNTY CHAMPIONSHIP

1	Stanley		J. C. Clark, Jr.	1:13 4-5
2	Chalmers-Detroit		J. F. Harrington	1:18

RECORD TRIALS OPEN TO ALL CARS

1	Stanley		L. F. N. Baldwin	0:55 1-5
2	Alco	54	Harry F. Grant	1:01 3-5
3	Chalmers-Detroit	40	L. B. Lorimer	1:12

President Coughlin more than busy.

Atlas which took a first.

A Look at Eight-Cylinder Engine and Propeller on Bleriot's Twelfth Monoplane, Just Produced

BLERIOT'S TWELFTH MONOPLANE

PARIS, June 10—Louis Bleroit, the French monoplane enthusiast, has just produced his No. 12, an improved type of monoplane flying machine driven by a 50-horsepower, eight-cylinder E. N. V. engine, the features of which were set forth in a recent number of this paper. The new flyer has its engine full forward and attached to the lower members of the frame, the drive being by chain to a two-bladed wooden propeller revolving at about one-third the engine speed. The pilot's seat is under the center of the wings, and to the rear of the engine, in which position he is only a few inches from the ground when a start is made, and has room for a passenger by his side. A pleasing feature of the aeroplane is the very neat arrangement of plain radiating tubes in the framework of the machine connecting the wings to the tail. In this position the tubes offer no resistance whatever to the advance of the aeroplane and yet profit by the current of air set up when flying. The tail of the aeroplane has been considerably improved on the previous models in order to give increased stability. It is composed of three vertical rudders, operating together and allowing of lateral movement, and a couple of horizontal pivoting planes regulating the height of the machine in the air.

The first important journey of the new aeroplane was intended to be a repetition of Bleriot's first cross-country trip from Toury to Artenay, undertaken last October. This could not be covered in its entirety, for after traveling nine miles across country the gasoline supply became exhausted and it was necessary to seek external aid for the return portion of the trip. The attempted round trip was made on the occasion of the inauguration of the monument in honor of last year's exploit.

FRANCE HAS BUILT RUSSIA'S AIR CRAFT

PARIS, June 10—France is about to deliver to Russia her first aerial cruiser, the *Russie*, constructed in the Lebaudy shops at Moisson, near Paris, on practically the same lines as the successful *Republique* for the French army. Trial trips have taken place this week around Paris in the presence of a group of Russian officers sent here to inspect the airship. The overall length of the *Russie* is 170 feet, and her cubic capacity 12,000 feet. Her envelope is made of rubbered cloth supplied by the Continental Company. Her power plant consists of one four-cylinder Panhard-Levassor engine of 80 horsepower, driving two pairs of propellers, and capable of giving to the aerial vessel a speed of 40 miles an hour in still air. The *Russie* will shortly leave for her home station, and will be housed in a special dismountable shed built for her by the American engineer, Melvin Vaniman.

HERRING GETS EXTENSION OF TIME

WASHINGTON, D. C., June 14—The War Department, it is understood, has not only granted A. M. Herring an extension of the time for the completion of the tests of his aeroplane, but has waived the date of delivery. The only requirement now is that the aeronaut complete his trials by July 1.

CURTISS AEROPLANE AT MORRIS PARK

NEW YORK, June 14—Interest in aeronautical circles is centered in the assemblying and testing of the new Curtiss light biplane which has arrived at the Morris Park grounds. The entire machine weighs but 550 pounds with the operator, and will be tried before the public exhibition on June 19 or 26.

St. Louis Will Get a Wright Flyer—A special committee has been appointed by the Aero Club of St. Louis to confer with the Wright Brothers relative to giving an exhibition in connection with aerial events scheduled for October. If neither of the brothers can attend the club will purchase a machine and have it operated by one of the Wright students.

Boston "Tech." Will Give Aeronautic Course—Prof. R. C. MacLaurin, the new president of the Massachusetts Institute of Technology, is planning a course in aeronautics for the opening of the institute next year. It will include practical work in designing, building, and operating various types of machines.

From Brownsville, Texas, comes a story of the successful trial trip of the first aeroplane constructed in the Lone Star State: "Prentice A. Newman, in an aeroplane designed along new lines, made a successful flight of about half a mile, towed by a 45-horsepower Pierce-Arrow automobile. The aeroplane had not been equipped with its own propelling mechanism but its inventor desired a trial, and a three-quarter-inch rope, about 182 feet long, was attached. The day was clear with a head wind of from 12 to 15 miles an hour velocity. At eight miles an hour the aeroplane cleared the ground; at 10 to 12 it rose fairly in the air, carrying the inventor, of course, and at this low rate the towing became very easy; at a speed of 25 miles an hour the towing line was at an angle of approximately 45 degrees, giving the machine an altitude of from 90 to 130. The aeroplane then balanced perfectly in all positions of the wind, and when the car slowed up the aeroplane coasted on its own momentum for two or three hundred feet. Mr. Newman then swung it to one side by the steering gear, to avoid some trees, and it landed easily."

CLEVELAND CLUB'S CLIMB UP PORTER HILL

CLEVELAND, June 14—Unfortunate is the proper word to apply to the Cleveland Automobile Club's choice of a day on which to hold the annual hill-climbing contest. As first scheduled, the races were to come off on June 5, but the weather man being contrary at that time, the first postponement to June 9 was made. On that day things did not look much brighter, but several days of continuous downpour had so scared the committee that they decided to hold it anyhow. The rains had put the scene of the day's activities in the worst possible condition, so that it was necessary to put scrapers on the job for more than a few hours before the surface of Porter Hill was fit to use.

Owing to the postponements and the bad day the entrants were reduced in numbers, so that it was necessary to eliminate several of the carded events. Those remaining were well contested, and the enthusiasts from the city, as well as the farmers from nearby, enjoyed a good day's sport.

Next to Knox, which cleaned up no less than four events and made the fastest time of the day, Mrs. Otis and the little Hupmobile shared the honors. The former sent her big Stearns roadster up the half mile grade from a standing start in the fast time of 51.2 seconds. This was not a contest, but an exhibition, and the time made was the fifth best of the day.

The Hupmobile created a sensation by winning two events, the only ones in which it was entered. The striking feature of the car was its size, being so small as to be dubbed "The baby of the meet." The original program made no provision for the motorcyclists, but on the spur of the moment a contest for them was organized and run off. This was very successful and the time made by the winner, A. W. Strople, on an Indian, was beaten only by the flying Knox. Strople made the steep ascent in 42.5 seconds.

All of the contestants seemed to be familiar with the hill, showing that much preliminary work had been done in anticipation. The officials ran the events off in good shape, notwithstanding the weather conditions. The final event, number eleven, was a piston displacement handicap, in which, some insist, the final results still seem to be in doubt.

The White gasoline car, winner in the $2,000 to $3,000 touring class, was the product of the newly formed White Motor Car Company, and is not to be confounded with the newer venture of The White Company, the well-known builders of steam-driven automobiles, which has recently added a small gasoline model to its line. The results follow:

GASOLINE STOCK CARS, $2,001 TO $3,000, TOURING CARS

Car	H.P.	Bore	Stroke	Driver	Time
White (Gasoline)	45	5	5	Camra	1:11 1-10
Chalmers	45	4 1-5	5	Davis	1:36 5-10

GASOLINE STOCK CARS, $2,001 TO $3,000, RUNABOUTS

Knox	40	5	4 3-4	Belcher	:48 9-10
Pullman	40	5	4 3-4	Hardesty	1:08 7-10

GASOLINE STOCK TOURING CARS, $1,251 TO $2,000

Oakland	40	4 1-2	5	Dennison	:59
Pullman	40	5	4 3-4	Hardesty	1:21 1-10

GASOLINE STOCK RUNABOUTS, $1,251 TO $2,000

Oakland	40	4 1-2	5	Bauer	:55 8-10
Oakland	40	4 1-2	5	Dennison	:59 2-10
Jackson	40	4 3-4	4 3-4	Paxon	1:33 7-10

STOCK RUNABOUTS, $851 TO $1,250

Regal	30	4	4	Schmidt	1:19 6-10

STOCK CARS, $851 TO $1,250

Hupmobile	20	3 1-4	3 3-8	Rauch	2:16 6-10

SIX-CYLINDER STOCK CARS

Mora	30	4	5 1-8	Adams	1:15 3-10

STOCK CARS WEIGHING 2,204 POUNDS OR LESS

Knox	40	5	4 3-4	Belcher	:50 3-10

STOCK CARS WEIGHING 881 TO 1,432 POUNDS

Hupmobile	20	3 1-4	3 3-8	Rauch	1:51

OPEN TO ALL MAKES OF MOTOR VEHICLES

Knox	60	5 1-2	5 1-2	Dennison	:39 2-10
Jackson	40	4 3-4	4 3-4	Paxon	:57 7-10
Mora	30	4	5 1-8	Adams	1:30 5-10

PISTON DISPLACEMENT HANDICAP

Knox	89	per cent.	efficiency
Jackson	76	"	"
Oakland	71	"	"
White (Gasoline)	55	"	"
Mora	50	"	"
Hupmobile	22	"	"

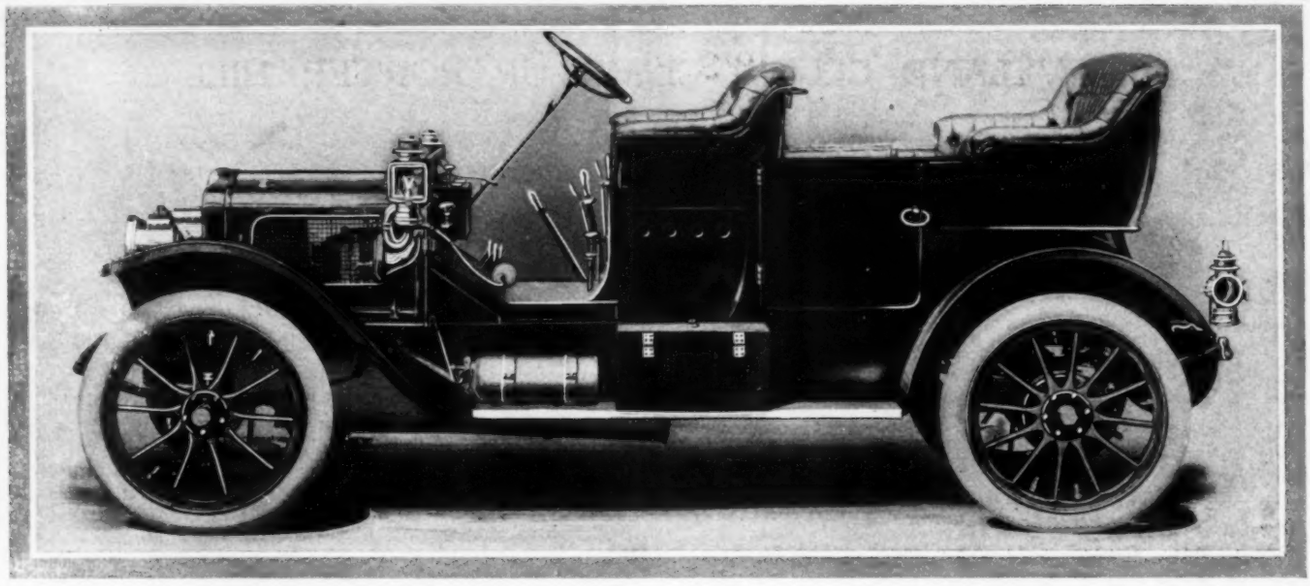
LOWELL GETS NATIONAL STOCK CAR RACES

LOWELL, June 14—Detailed arrangements for the national large and small stock car races that are to be held over the Merrimac valley course in this city during Labor Day week, will now be perfected, the final agreement with the Contest Board of the A.A.A. having been concluded last week. It appears that there was a misunderstanding concerning the attitude of the contest board toward the races and the Lowell club.

It had been stated that in addition to the sanction fee the board had demanded an absolute guarantee of a large sum of money, as a condition of the national events being held in Lowell. Concerning this matter President John O. Heinze this week met Chairman Hower and found that the report of the A.A.A.'s attitude was incorrect. What the A.A.A. asked was that it be given a preferred claim on a part of the net profits to cover the expenses to which it will be put on account of the race. Net profits are understood to mean any sum remaining after all the bills, including money advanced by citizens, are paid, and which would go into the treasury of the Lowell club. This arrangement is satisfactory to the club.

It has been decided to recover the same ten-mile circuit that was used last fall, the club officials being confident that all the cars that are entered can be started on this circuit, and that a much more interesting event will result than if the circuit is extended to fifteen miles or more as is possible. The city of Lowell and the club are prepared to spend about $12,000 to put the course in shape and with this expenditure the circuit ought to be the best in the country, for about half of it is State highway already in excellent shape. In place of the hairpin turn at the Tyngsboro end of the circuit, a new macadamized road, scientifically banked, will be constructed, so that the cars can whirl around from the boulevard into the back-stretch without skidding and at full speed. All parts of the back stretch and of the lower cross road will be put in first class condition.

The grand stand is to be constructed on the boulevard where the spectators will have a fine view of the racing cars, and it will be built to seat 10,000 people. Its back will be to the Merrimac river and across the river at that point a pontoon bridge with a twelve foot walk will be built. On the opposite side are the tracks of the Boston & Maine railroad and of the trolley line. This plan will make access to the course much easier than was the case last year. The entry blanks will be prepared by the contest board of the A.A.A. and will be issued very soon. Trophies will be offered in both races, but the names of their donors have not yet been announced.



Model "O O" Twenty-Horsepower White Steamer Presents Unusually Attractive Lines

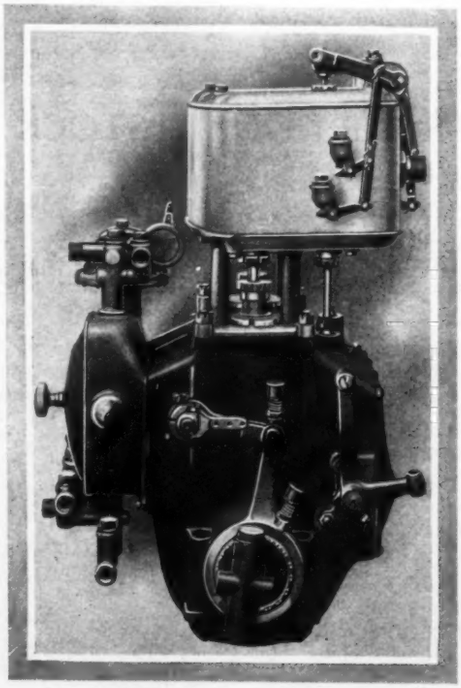
WHITE CARS FOR 1910 INCLUDE A GASOLINE

THE 1910 models to be made by the White Company comprise a 20-horsepower steam car selling at $2,000; a 40-horsepower steam car selling at $4,000, and a 20-horsepower gasoline car which will be made in two types, differing in details of running gear and body construction, but with identical power plants. These two types will sell at $2,000 and $2,500 respectively. All of the above prices are f. o. b. Cleveland and are for cars with touring, toy tonneau or runabout bodies.

The most important new feature in the 1910 White Steamers will be, as already announced, the modifications whereby either kerosene or gasoline may be used as fuel. Plans have been made for building a greater number of steam cars than have been turned out in any previous year, and shipments from the factory will commence before July 1. The design of the gasoline car and the materials used in its construction are in accordance with the most advanced and modern foreign practice.

The 20-Horsepower White Steam Car—Considering, first of all, the 20-horsepower steam car; this will be known as the Model "O-O," and will be the successor of the Model "O" of the present season. The most noticeable change in the external appearance of the new model is a lengthening of the wheelbase to 110 inches. The frame has been lengthened and the power plant moved back so that the front axle is immediately under the condenser. The shape of the mud guards has been somewhat changed, as will be seen in Fig. 1. The engine is compound, vertical, and of the same compact construction as in the 1909 model, with a high-pressure cylinder of 2½-inch bore, a low-pressure cylinder of 4¼-inch bore and a stroke of 3 inches. The crankshaft is a short, one-piece forging of tool steel with but two main bearings. Both the high-pressure valve and the low-pressure valve are piston valves and are driven direct from the connecting rods by what is known as the Joy valve mechanism. The two main bearings and the two connecting rod bearings are fitted with ball bearings of unusually large size.

A change has been made in the method of driving the two pumps which supply water to the generator. Instead of being driven from the valve gearing, as in the 1909 engine, they are driven from an eccentric. This eccentric is located outside of the crankcase at the rear of the engine and is forged integrally with that part of the universal joint which is attached to the crankshaft, as clearly shown in the accompanying picture. As in the 1909 engine, the pump which returns water from the condenser to the tank and the air pump which supplies pressure for the fuel tank and for inflating tires are driven directly from the valve mechanism.

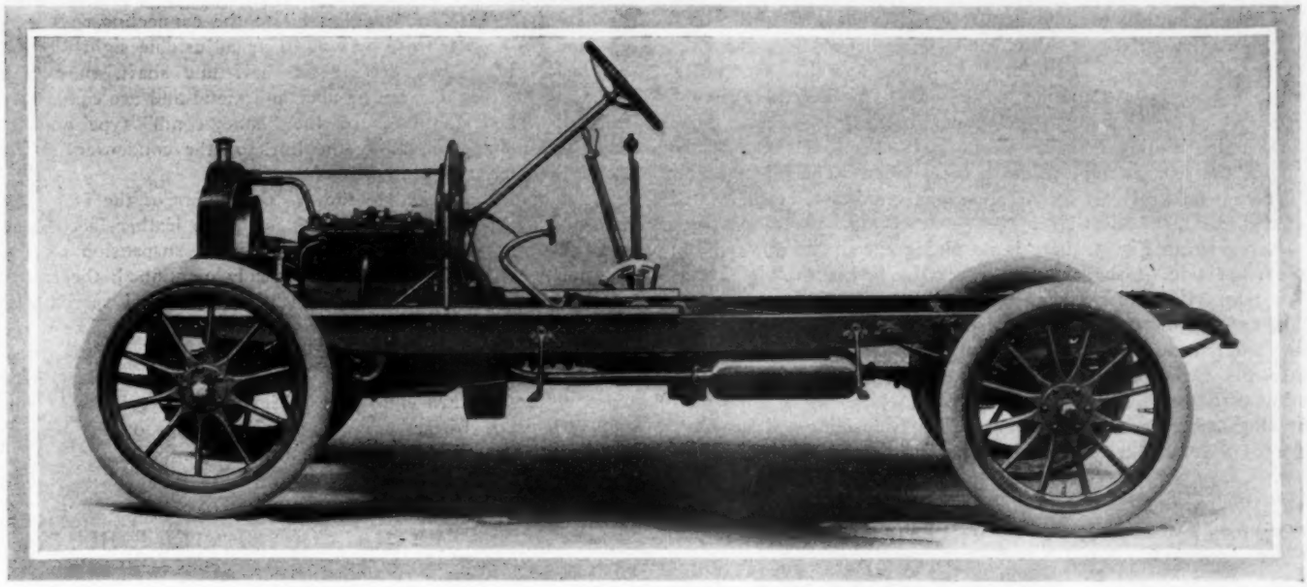


Rear View of 1910 White Engine

Showing the eccentric for driving the water pumps. The 40-horsepower engine and 20-horsepower engine are identical, except as regards dimensions.

The frame of the Model "O-O" is of pressed steel; the tires, both front and rear, are 32 x 3 1-2; the front axle is of I-beam section and all the bearings in the car are annular ball bearings.

The 40-Horsepower White Steam Car—The 1910 40-horsepower White Steamer will be known as the Model "M-M," to indicate its close relationship to the Model "M" of the past season. The most marked change in the external appearance of the new car is that the steering post is tilted considerably more than in the previous model and the shape of the mudguards has been changed. The wheelbase remains unaltered at 122 inches. The frame is of steel, replacing the armored-wood construction formerly used. The "M-M" engine has all the characteristics of the Model "O-O" engine, described briefly above, including the feature of driving the water pumps by means of an eccentric located outside of the crankcase. The dimensions of the Model "M-M" engine are: High-pressure cylinder, 3-



The New White Gasoline Chassis Shows Classy Design and Up-to-Date Constructive Features

inch bore; low-pressure cylinder, 5-inch bore, and stroke, 4 1-2 inches, the same as in previous models.

The Model "M-M" is equipped with 36 x 4 tires on the front wheels and 36 x 5 tires on the rear wheels.

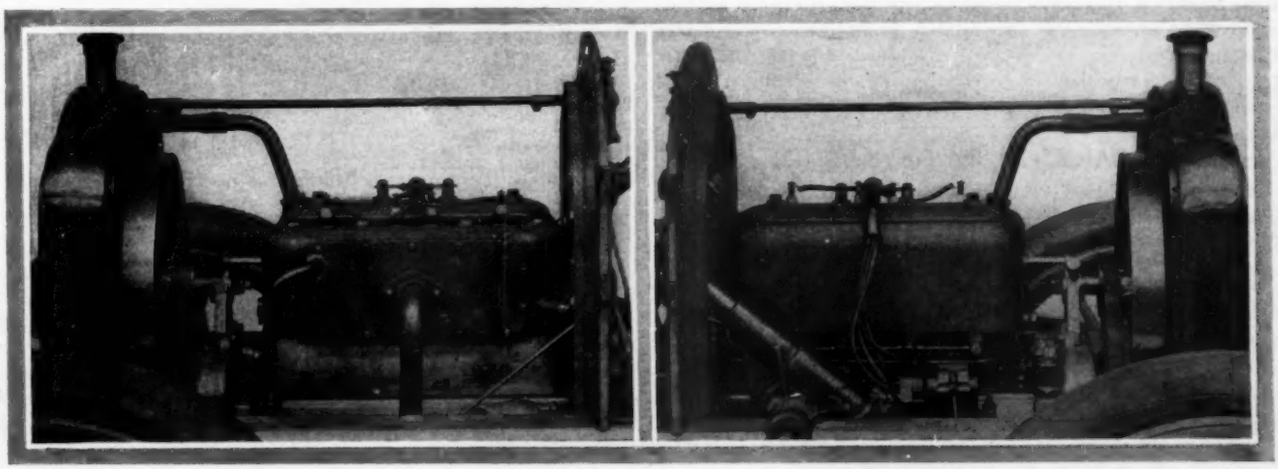
Features of Both Steam Models—In order to use kerosene as fuel no change has been made in the burner proper. The only modifications are in the vaporizer and in the shutter controlling the amount of air admitted to the burner. As in the case of many other great mechanical advances the desired end—in this case to use kerosene as fuel—is obtained by means which are surprisingly simple. As for the degree of success obtained by the designers of the White in adapting the car for the use of kerosene, it is only necessary to say that when the car is in operation it is practically impossible for any one to tell whether kerosene or gasoline is being used as fuel. When starting the car "cold" it takes about five minutes longer to heat the vaporizer sufficiently so that the main fuel supply may be turned on, but thereafter the action and operation of the car are the same as when gasoline is used as fuel. Only a few minutes are required to make the necessary adjustments to the vaporizer and to the shutter so that the fuel may be changed from kerosene to gasoline or vice versa.

The generator in both the Model "M-M" and Model "O-O" is of the usual White construction, consisting simply of nine coils of steel tubing so joined together that in operation water is supplied to the upper coil and steam issues from the lower coil. No change has been made in the regulating system, as this part of the car may be said to have been developed to a state of perfection; that is, the temperature and pressure of the steam remain practically constant without in any way engaging or requiring the attention of the driver, no matter what the running conditions may be.

The White Gasoline Car—With the addition of a gasoline car to the White products the extensive selling organization of the company is in a position to meet the demands for all classes of cars. In adding a gasoline car to its line at this time the White Company, with its factory facilities, long experience in automobile building and trained organization, unencumbered by any preconceived notions for or against any particular construction, is in a position to furnish the best in gasoline-car design, workmanship and material.

The White gasoline car is fitted with a four-cylinder, four-cycle engine of extremely simple and neat design. The car has a four-speed selective type transmission and a shaft drive. The four cylinders are cast in one piece. The cylinder dimensions are 3 3-4-inch bore and 5 1-8-inch stroke. The stroke is longer in proportion to the bore than in any other American car, the White construction being in accordance with the 1909-1910 practice of the leading foreign designers. The advantages claimed for the long stroke are much greater efficiency and higher fuel economy.

A feature of the car is the unusually small amount of piping and fittings under the bonnet. The valves are all on one side and are actuated by a single half-time shaft. The valve springs are not exposed to view, but may be inspected or replaced by removing a side plate.



The inlet side of motor shows simple piping

And the magneto side, too, looks clean cut

Left and Right Hand Views of the White Gasoline Block Type Long Stroke Motor

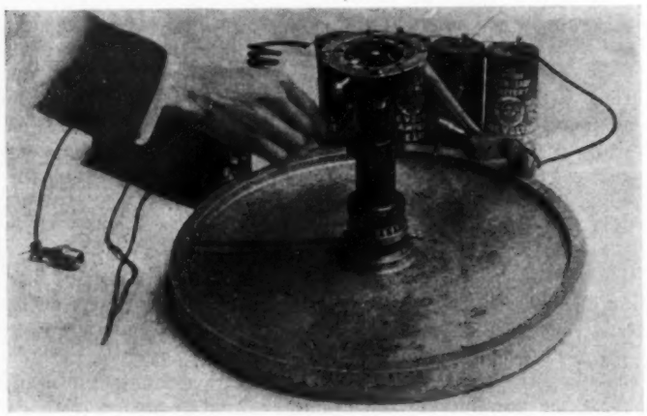
There is neither an inlet manifold, an exhaust manifold or a water manifold in sight. Fig. 4 shows the left-hand side of the engine on which side are located the valves and the spark plugs. At the front of the engine on this side is a centrifugal pump, from which a pipe leads to the water jacket. In the center is the intake pipe leading from the carbureter. From the rear of the engine the exhaust pipe leads to the muffler. The oil reservoir forms an integral part of the aluminum crankcase, being located at the rear on the left side.

As shown in Fig. 5, there is no piping except the oil leads on the right side of the engine. The only device on this side is the gear-driven Bosch magneto, to which the timer is attached. The only wiring on the car consists of the four short wires leading from the timer to the spark plugs, as shown in Fig. 5, and also the two wires leading to the switch on the dash. The crankshaft has but two main bearings which are annular ball bearings of generous dimensions. The connecting-rod bearings are of Parsons' white metal. The oil pump is driven from the half-time shaft and supplies oil to the connecting-rod bearings and to the crankcase by way of an adjustable sight-feed on the dash. The gears driving the half-time shaft, the water pump and the magneto are of fiber and metal and are completely inclosed. The radiator is of the "honey-comb" type and its shape follows approximately the lines of the condenser of the White Steamer.

The engine is attached to the cross-members of the frame by three-point suspension. The clutch is of the leather-faced cone type. The gear-case is hung by three-point suspension on the cross-members of the frame. As already mentioned, the transmission is of the selective type with four forward speeds and one reverse. The direct drive is on the third speed. The drive from the gear case to the rear axle is by means of a shaft fitted with two universal joints. The frame is of pressed steel, narrowed at the forward end. The wheel-base is 110 inches. The front axle is of I-beam section and all bearings on the wheels and in the rear axle are annular ball bearings.

INTENDS TO HAVE PERFECT COMMUTATORS

To repeat an old expression, there's many a slip betwixt the cup and the lip. This does not apply to automobile parts, but a perverted form of it might be made to do duty as a means of expressing the fact that the finished machine may lack something intended to be put on or in some way attended to. So, any device which has for its object the proving of correctness of a minor part of the machine is worthy of attention.



Device for Testing the Accuracy of Rambler Commutators

In the work of producing a vast number of machines as in the factory of Thomas B. Jeffery & Company, a little machine just perfected will save the future owner many a long search for the source of trouble. This is a commutator testing device, and is intended to prove up, previous to use, the condition of the timer. A gear with a contact arm and roller, corresponding to these parts on the commutator, is attached in the center of an indicator, upon which an arrow shows whether the timer is set to fire early, late, or correctly. By this means it is asserted absolute accuracy of timing is obtained.

71 ALARMS IN 136 DAYS; $24.81

GRAND RAPIDS, MICH., June 14—The value of the automobile fire engine was one of the principal subjects of discussion at the Michigan State Firemen's Convention, which has just been held in this city. Chief Charles Fishbeck of Alma read a paper favoring self-propelling machines, and in the discussion the advantage of the auto over the ordinary horse-drawn engine in climbing hills, on clay roads and unpaved streets was pointed out, and the saving of the expense of an extra hose cart for carrying hose. Chief Delfs, of Lansing, who has recently been furnished with an auto engine, reported that his engine had responded to 71 alarms in 136 days, a total of 16 hours at a total cost of $24.81.

A HANDY METRIC CONVERSION TABLE

The table here given is one circulated among engineers by the C. W. Hunt Company, of West New Brighton, N. Y., and in view of the manner in which it is compiled, it should be of good advantage to automobile engineers and others who are required to treat with metric measurements in conjunction with the English system. It is given below:

Millimetres × .03937 = inches.
Millimetres ÷ 25.4 = inches.
Centimetres × .3937 = inches.
Centimetres ÷ 2.54 = inches.
Metres × 39.37 = inches. (Act Congress.)
Metres × 3.281 = feet.
Metres × 1.094 = yards.
Kilometres × .621 = miles.
Kilometres ÷ 1.6093 = miles.
Kilometres × 3280.8693 = feet.
Square Millimetres × .00155 = square inches.
Square Millimetres ÷ 645.1 = square inches.
Square Centimetres × .155 = square inches.
Square Centimetres ÷ 6.451 = square inches.
Square Metres × 10.764 = square feet.
Square Kilometres × 247.1 = acres.
Hectare × 2.471 = acres.
Cubic Centimetres ÷ 16.383 = cubic inches.
Cubic Centimetres ÷ 3.69 = fl. drams (U.S.P.)
Cubic Centimetres ÷ 29.57 = fluid ounces (U.S.P.)
Cubic Metres × 35.315 = cubic feet.
Cubic Metres × 1.308 = cubic yards.
Cubic Metres × 264.2 = gallons (231. cubic inches).
Litres × 61.022 = cubic inches. (Act Congress.)
Litres × 33.84 = fluid ounces. (U. S. Phar.)
Litres × .2642 = gallons (231. cubic inches.)
Litres ÷ 3.78 = gallons (231. cubic inches).
Litres ÷ 28.316 = cubic feet.
Hectolitres × 3.531 = cubic feet.
Hectolitres × 2.84 = bushels (2150.42 cubic inches).
Hectolitres × .131 = cubic yards.
Hectolitres ÷ 26.42 = gallons (231. cubic inches).
Grammes × 15.432 = grains. (Act Congress).
Grammes ÷ 981. = dynes.
Grammes (water) ÷ 29.57 = fluid ounces.
Grammes ÷ 28.35 = ounces avoirdupois.
Grammes per cubic centimetre ÷ 27.7 = lbs. per cu. in.
Joule × .7373 = foot pounds.
Kilo-grammes × 2.2046 = pounds.
Kilo-grammes × 35.3 = ounces avoirdupois.
Kilo-grammes ÷ 907.2 = tons (2,000 pounds).
Kilo-grammes per sq. cent. × 14.223 = lbs. per sq. in.
Kilo-gram-metres × 7.233 = foot pounds.
Kilo-gramme per Metre × .672 pounds = lbs. per foot.
Kilo-gramme per Cubic Metre × .062 = lbs. per cu. ft.
Tonneau × 1.1023 = tons (2,000 pounds).
Kilo-Watts × 1.34 = Horsepower.
Watts ÷ 746. = Horsepower.
Watts × .7373 = foot pounds per second.
Calorie × 3.968 = B. T. U.
Cheval vapeur ÷ .9863 = Horsepower.
(Centigrade × 1.8) + 32 = degree Fahrenheit.
Franc × .193 = Dollars.
Gravity Paris = 980.94 centimetres per second.

CANADIAN PACIFIC RAILWAY ADOPTS AUTOS

MONTREAL, CAN., June 14—One of the latest innovations in modern railway work, the automobile hand car, has been adopted by the Canadian Pacific Railway. A number of these have been purchased and put into active service, one on each division, to be used for inspection work. The little cars, for they are so small and light that a few men can lift them onto or off of the track in time of necessity, will be useful for close inspecting work which the ordinary locomotive and car can not do.

Exhaust Side of Automobile Motors

By Thos. J. Fay

Part II

NOISE is the bane of the automobile, particularly the character of noise that emanates from the exhaust of a motor, and it is the function of a muffler to stifle the same. The efficiency of such a device cannot well be regarded as an abstract quantity on the ground that all motors do not perform in like manner as respects noise made. This is proven when a given muffler, which may be satisfactory on a given motor, fails to do good work on another motor of the same size.

It is even true that a given motor will act differently under changing conditions, and in a general way it may be said:

(A) Noise will swell in volume as the compression is increased.

(B) The combustion pressure will cause noise, increasing with the same.

(C) A belated spark will induce noise, due to the combustion continuing into the muffler.

(D) Noise will be present, increasing as the terminal pressure.

(E) Increasing speed will have the effect of increasing noise also.

(F) Noise increases as the volume or weight of the exhaust gas increases.

(G) Ill-devised parts, in which vibrations are at a rapid rate, will have a marked effect on the volume and character of the noise emitted.

To better understand the reasons why noise is made it will be profitable to go into the details of the phenomenon, rather with the expectation of being the more able to thwart the process and eliminate the noise.

Sound Is Not Produced In a Vacuum—Sound implies the vibration of air or some other medium; obviously, a vacuum, in which there is nothing to vibrate, will not support sound. Since sound implies vibrations, some of which may be classed as harmony and the balance as discordant (noise), the problem of the exhaust may be approached along lines taking into account the natural laws, in so far as they are applicable.

When a sound is perceived it is certain that some body, in one of its states of aggregation, is being vibrated; moreover, when a body is vibrated the air surrounding the same vibrates in unison, and the effect of the vibrating body on the surrounding air must be taken into account in any attempt to stifle the sound. The drum-skin of the ear, together with the bone members, vibrates in response to surrounding vibrations, and in this way we are rendered conscious of the vibrations which we call noise if they are out of harmony, and musical notes if they impress us favorably. Were all men deaf, it would be a matter of no moment at all as to the character of the vibrations made by the exhaust from motors, and no attention would be paid to this phase of the problem, excepting as the vibrations would affect the life of the parts or the amount of power available.

Acoustics, which is the branch of Natural Philosophy dealing with the vibrations that cause sound, must be regarded as the cause of the manifestations, while sound is a sensation peculiar to the ear; since deafness is not universal it becomes necessary to treat with the acoustics of the automobile in order to afford agreeable, if any sound, as it is emitted from the bowels of a car, and as experience dictates, the exhaust is a prolific source of the class of sound that is placed in the catalogue of noise.

The best results will follow if all vibrations are eliminated, and next to this, it is desirable to so control the vibrations, that the sound emitted will be feeble at best, and of a character such as can be borne with equanimity. The absolutely sure way to abort sound is to place the car in a hermetically sealed chamber and exhaust the air from the same; even then the car, at any part, must not contact with the chamber; this is not a practical way to proceed, but it does afford a fulcrum, as it were, on which to rest the lever of reasoning, rather with the expectation that the lever will multiply advantage and lift the reasoner to a higher and more satisfactory plane.

Since it is the ear that is affected by sound, and in view of the ease with which the same ear becomes unconscious of sounds that in the beginning are perfectly audible, it is easy enough to reason out how builders of cars persuade themselves into the belief that their products are as noiseless as the very depths of Nature in the still of the night, whereas others may be much impressed by the very noise emitted. In the delineation of noise (sound) then, there are phases of the problem that cannot well

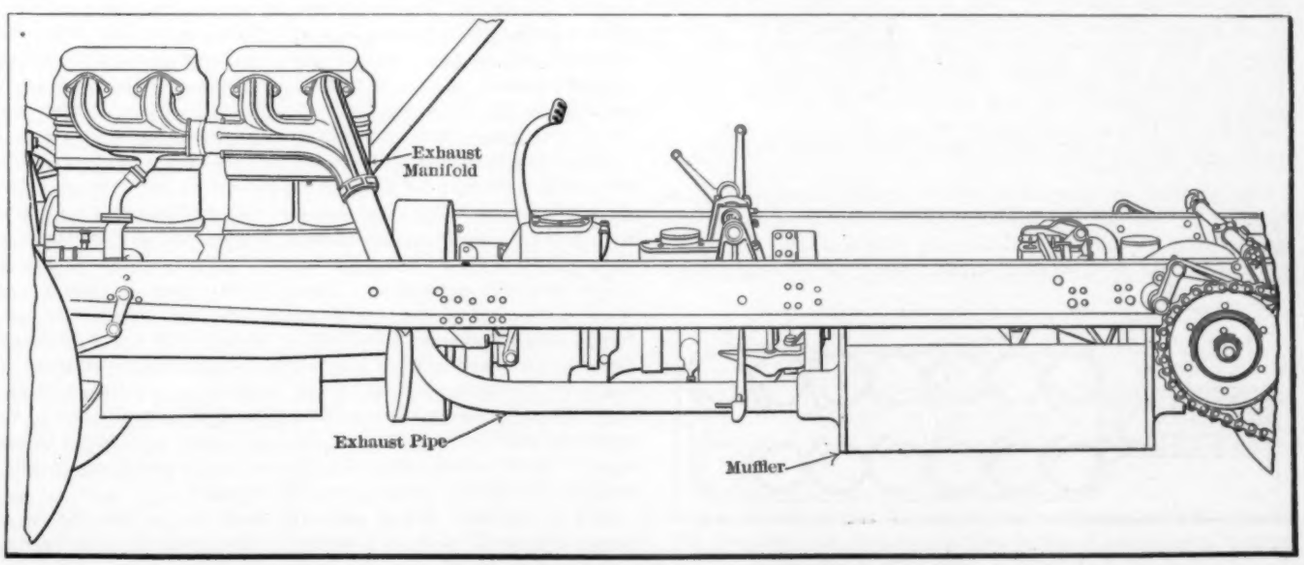


Fig. 61—Showing position of muffler, how the exhaust pipe passes along to the manifold, and easy bends at all points

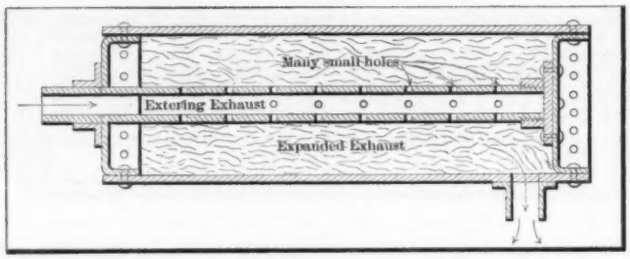


Fig. 62—Depicting a simple form of muffler, used on many cars, and delivering good satisfaction

be disposed of on the ground that what one person calls noise another would fail to notice.

Noiseless performance, then, is not always what it is presumed to be and in the discussion here it will be to the purpose to designate the same as "performance in the absence of any noise at all," such as would be audible from a prospect in the vicinity of the performing car to one who is not under the influence of the chloroforming influence due to long familiarity.

Sound travels at a constant velocity, no matter what may be the pitch, intensity and timber, which are the three prime qualities by which it is interpeted. By pitch, sound is located on a scale; thus we speak of sounds higher, or lower on the scale, and the higher the pitch the greater is the number of vibrations that produce it. The ordinary ear is sensitive to sounds that are produced by 40 vibrations per second, which low rate of vibration induces a sensation that resembles the beats of two base organ pipes if they are considerably out of tune. In the higher range of vibrations the average ear is unconscious of sound produced by 12,000 to 20,000 vibrations per second, and many are so "sound blind" that they are incapable of noticing the result of less than the minimum number (12,000) stated.

In America, Great Britain, and Germany, a vibration is taken to be a movement to, and fro, of the vibrating body. In France, a vibration is regarded as a motion to, or fro. This difference must be taken into account when the matter is under consideration.

Pitch rises with the number of vibrations, and may be determined in divers ways, as when a disc (of cardboard), perforated (in a suitable way), is rotated, and a glass tube, in juxtaposition, is blown through, and the disc is rotated at a uniform rate, simultaneously. The puffs of air resulting will emit a sound of increasing pitch, as the tube is moved out on the disc, under the influence of the rows of holes placed with an increasing radial relation, equi-distant from each other. Pitch then is under the influence of the physical shape of the member vibrated and the rate of vibration is the matter to be given consideration.

Intensity, as the word implies, relates to the energy of the air vibration which strikes the ear; hence the "amplitude" (extent of transverse vibration of the sounding body) may be measured, and in so doing it is possible to predict intensity, as it is affected by distance, in view of the law, which may be stated as follows:

The intensity of sound (like that of light) varies inversely as the square of the distance.

This question of intensity is of the greatest importance from the point of view of the muffler, which is the thing to be kept uppermost in the mind's eye during the course of this discussion. It was said that, in a vacuum, sounds cannot be propogated, for

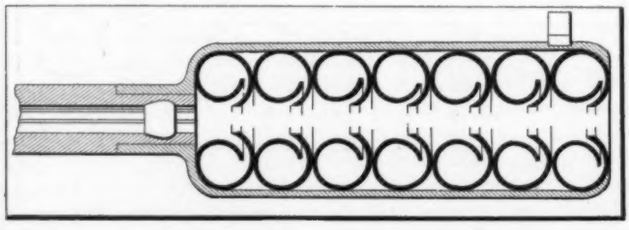


Fig. 63—Maxim's silencer, used on guns, but suitable for use in muffling work, in connection with automobiles

the reason that there is no matter to set into vibration; let us reason backwards, and to illustrate a point, go down into a caisson, in which the air pressure is as much as two atmospheres; under such conditions, even a whisper becomes a noise, and conversation at the ordinary (normal) intensity becomes painfully loud. Increasing the pressure of the atmosphere then has the effect of increasing the intensity of sound due to vibration, and in a muffler the pressure is increased over that of the atmosphere (by a considerable amount; to at least two atmospheres), so that the intensity of sound is the normal expectation. Then, account must be taken of pressure variations, and the differences in intensity that must follow in view of the increase in intensity for increasing pressure, which assures that the intensity will change with the pressure changes. In this way the intensity of sound becomes compound, as it were, and a classification becomes very difficult, excepting that it is a noise that will result, rather than a musical note; of that we have exact knowledge and not a few examples.

"A simple sound is one in which the ear can distinguish only one sound of one pitch." A tuning-fork, for illustration, emits a simple sound; composite sounds are the product of several simple sounds intermingled, as exemplified when a piano wire is struck, causing it to vibrate. In the instance of the piano wire, it is the practice to so locate the venters and nodes that

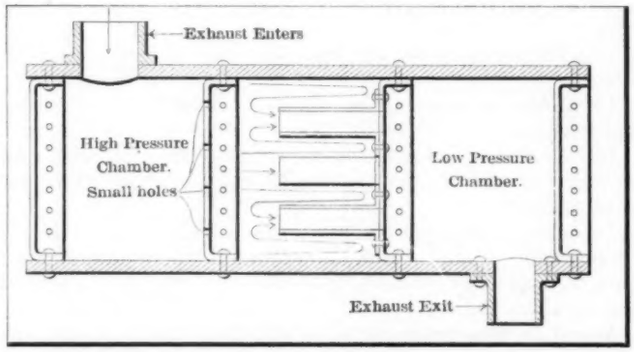


Fig. 64—Simplex type of muffler, showing three chambers, so contrived that the pressure is reduced almost to zero before the exhaust makes its exit to the atmosphere

sounds are as overtones in the harmonic relation; as, when treble C (middle) is to 1:2:3:4:5:6:7:8 C, etc. The intermingling of the overtones, in such a case, will have for the lowest pitch, the treble C superimposing the higher harmonics.

"All simple sounds have the same timber." This property, referring to sound, is analogous to color in light; in sound, it is possible to change the timber by the simple expedient of mingling a different set of simple sounds, in a manner not unlike the changes that can be wrought in color, by altering the proportions of the pigments used. A chorus of components, however, may be in harmony, or it may not. In the case of the muffler, the chorus of sounds emitted is, as a rule, discordant.

The difference between harmony and discord is not so readily explained, although, as a musical proposition, we owe much to the work of Helmholz, and for the rest, perhaps in a practical way, to Prof. Mayer. As Helmholz pointed out, if light is taken as an illustration, and the number of flashes per second are at a low rate, the sensation is disagreeable; upon increasing the number per second the sensation changes, and when a certain rate is attained the eye then fails to perceive the spaces between flashes (the dark periods), and the disagreeable sensation is lost. In the same way, as it was pointed out, beats of sound show the same effect. When Prof. Mayer undertook to demonstrate the point to be made, he used disks perforated with various sizes of holes, which admitted and shut off the sound alternately, with the result that flashes of sound followed.

In this way Prof. Mayer was able to determine that the duration of sensation of sound depended upon the pitch of the same, and he also found that the higher the pitch the less the in-

terval of time. It has been determined that when resultant beats of sound from two sets of vibrations are intermingled the number of beats per second corresponding must be at a certain high rate or the sound will be of the character classed as noise. When a plurality of separate vibrating members are in sound relation, as in a muffler, it is difficult to see how, by deliberate design, the resultant can be sufficiently controlled to assure a musical sound; nor is it to be supposed that a muffler should be an imitation of a steam caliope.

What Practice Would Seem to Dictate—From what has been said involving the laws of sound, it would seem as if the one best way to fashion a muffler should take into account the intensity, pitch and timber of such sounds as are produced at the atmospheric pressure. So much for the functions of the muffler, which does not afford the right to design the same in such a way that the materials used will act as sounding-boards, bells, pipes, etc. Fig. 61 is offered as illustrating a system so contrived that the bends are easy, the materials so disposed that sounds emanating from them will be but feeble at best, and the parts are so supported to the chassis that they are not prone to go adrift, hence chattering will be avoided.

A simple exhaust silencer (muffler) is shown in Fig. 62, consisting of a cylinder and a pipe so contrived that the pipe, which is drilled full of small holes, will admit the exhaust at high pressure, and as it is required to pass through a large number of small holes, it is split up and then expanded. The gas passes to the atmosphere in an even flow, at a pressure slightly above that of the atmosphere. This type of muffler is fairly efficient when well designed, but as a more advanced type it is very likely that the Maxim silencer will do better work. This silencer is depicted in Fig. 63, which is a cross-section, and, as will be seen at a glance, the gas as it enters the silencer is swirled around the spiral-like cells and is minutely subdivided and fully expanded in the process, so that it emits from the silencer (when it is used on a gun, at any rate) with little or no noise or sound of any kind.

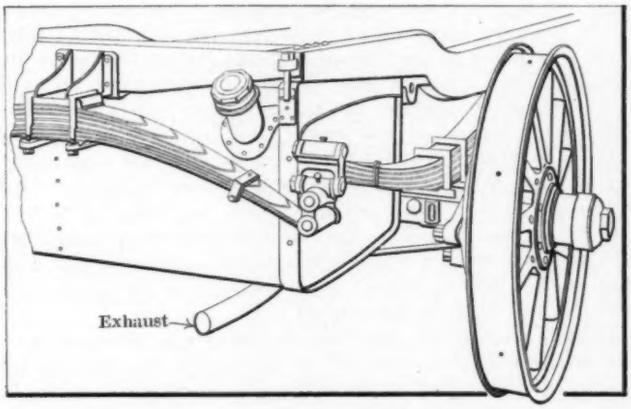


Fig. 65—Exhaust pipe passes under gasoline tank in rear, demanding that it be well secured to prevent whip-sawing

One of the most satisfactory types of muffler that the author has been able to experiment with is that as shown in Fig. 64, showing a cross-section of the "Simplex," from cars of the same name. In this type of muffler the exhaust enters a high-pressure chamber, and then passes through a separating wall filled with holes, 3-16 inch in diameter, of a combined area equal to that of a piston of the motor. The high-pressure chamber is designed with a cubical space equal to the displacement of one of the cylinders of the motor. The middle chamber of the muffler represents double the volume of one of the cylinders of the motor, and the tubes in the second dividing wall, of which there are five, have a combined area equal to that of an exhaust valve of the motor. The arrows show how the gases rush from the high-pressure chamber into the middle chamber, dash against the second wall, and, after bounding back, make their exit into the low-pressure chamber by way of the five relatively small tubes. The low-pressure chamber has a volume equal to that of the other two chambers combined, and that it should be more is probably true. The exhaust from the low-pressure chamber is in a little less than the period of four cycles, so that the space is available for the next inrush of gas after the completion of each four cycles. The illustration shows the cylinder with walls considerably thicker than practice dictates, although it is true that it is by way of noise reduction if the walls are thick.

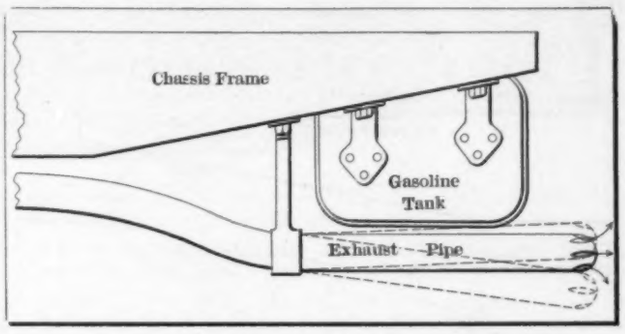


Fig. 66—Side view of constructions shown in preceding figure, and what happens if pipe is not well secured

Certain Design Features to be Considered—Besides the design of the muffler there is the question of the placing of the same. Fig. 61 shows the muffler in the fore-and-aft plans, in front of the rear axle; this is a very good location, and is the only one left when the gasoline tank is in the lateral plane to the back of the hind axle. Fig. 65 shows the gasoline tank to the rear, and the exhaust pipe passing under the same. Fig. 66 tells the balance of the story, provided the pipe is insecurely fastened, as it is in some cases; the end of the pipe whipsaws against the bottom of the gasoline tank, and it is but a matter of time when a hole will be the natural result in such a case.

Sometimes the muffler is placed to the rear of the chassis frame, in place of the gasoline tank, in the manner as depicted in Fig. 67, and a muffler cutout is located in the exhaust pipe just before it enters the muffler. That the muffler cutout should be well to the rear is assured, in view of the smell that is so prone to emanate from the exhaust, and locating the cutout at this point assures that the smell will be wafted away, with the hope that it will be of small inconvenience to the hindmost; the smell should be abandoned at the first way-station.

Sometimes the muffler is placed at the back in such a way that the exhaust pipe hangs from it and sags down, as shown in Fig. 68, so that there is an interference with the hind axle; this is a very serious matter, and it is only to be mended by suitably securing the exhaust pipe; incidentally, the muffler should be so fastened that it will stay in place and not rattle. The exhaust outlet may serve as a dust raiser, particularly if it is placed as shown in Fig. 69, with the end close to the road-bed and pointing at it. A better plan is offered in Fig. 67, and that the exit for the exhaust should be at the rear of the car is one of the points to be taken for granted.

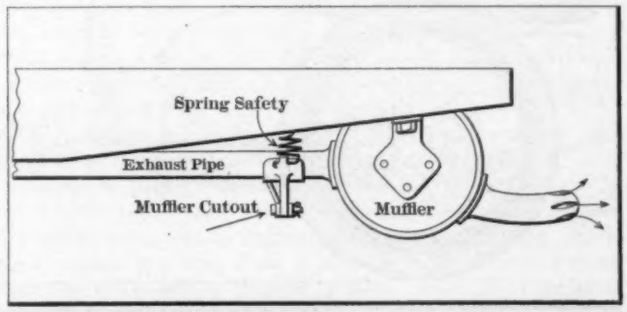


Fig. 67—Side view, showing muffler to rear of chassis, and muffler cut-out located so far back that exhaust will not float up into the car

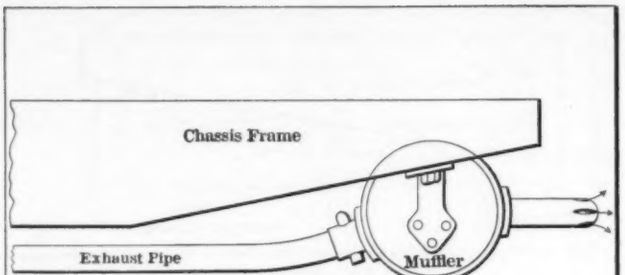


Fig. 68—Muffler located in rear and so weighed down by pipe that axle interference is imminent

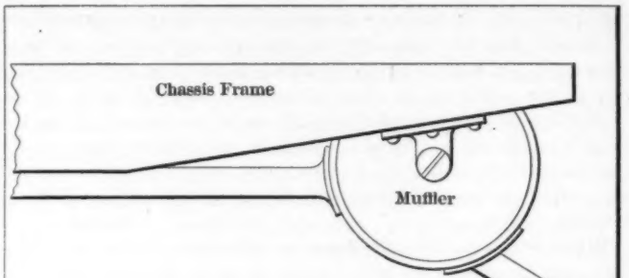


Fig. 69—Muffler in rear, and end of exhaust pipe pointed at the roadway, so near as to raise dust

In certain classes of work it is the custom to avoid the use of a muffler, on account of the back pressure that is likely to attend the use of any device provided for the purpose of aborting noise due to the exhaust. Fig. 70 shows a racing design in which no muffler is provided, and the exhaust is allowed to escape through direct openings on the side, not shown in the figure. In this connection it is well to point out that the design as shown in Fig. 64 is almost devoid of back pressure, and there are many examples of mufflers that do not offend to a serious extent in this direction. Before departing from the subject, especially as it relates to Fig. 70, it may not be out of place to emphasize the location of the gasoline tank, and the manner in which it is nested inside of the spare tires. In racing work, in particular, it is extremely difficult to keep the tank in place, and it is also a vain search betimes to find room for the spare tires; in this case the dual problem is neatly attended to. In conclusion, it will be enough to say that a little back pressure is better than much noise, and a muffler cutout will afford temporary relief, if it is found that the muffler does reduce the ability of the motor below the requirement on a hill.

Drop-Forged Steel Hangers Are Used—The time was when hangers of case gray iron were used to support mufflers and even the gasoline tank; experience has adequately proved that cast iron is of little or no value in this service, and the forgings of steel have to be of good quality if the work is to be regarded as of a permanent character. Nor can it be claimed that bronze castings are good enough to use, although it does seem as if steel forgings would have preference on the ground that they cost less, which is besides the question of their greater life in this class of work, not to mention the greater uniformity of material, absence of "wasters," and assurance of prompt delivery in quantity.

The work the hangers have to do does not look arduous when a car is standing on the floor of a garage, but on the road when cars are doing turns at some speed the side strains are well worth taking into account, and if they are not it is a fair inference that a repair bill will render itself manifest at an early date. The idea that castings are cheaper and that more material can be used is not a good one to follow up, for the increased weight placed on a chassis will make itself the basis of additional cost of springs, etc. The appearance is against such construction and that autoists would prefer to have cars in which castings are not used to support important parts is one of the matters that can be taken for granted.

If drop forgings are used they should have an adequate bearing against the sheet-metal ends of the muffler very much in the manner as shown in Fig. 68 rather than as depicted in Fig. 69 with good and secure riveting, so that the muffler will stay in place. The forgings should be of acid open-hearth steel, the composition of which may be as follows:

Carbon	Silicon	Sulphur	Phosphorus	Manganese
0.20	0.10	0.04	0.04	0.40

If there is any difference the carbon might well be a little lower, say, 16 points, rather than to have it higher. The manganese might also be held a little lower than the value given.

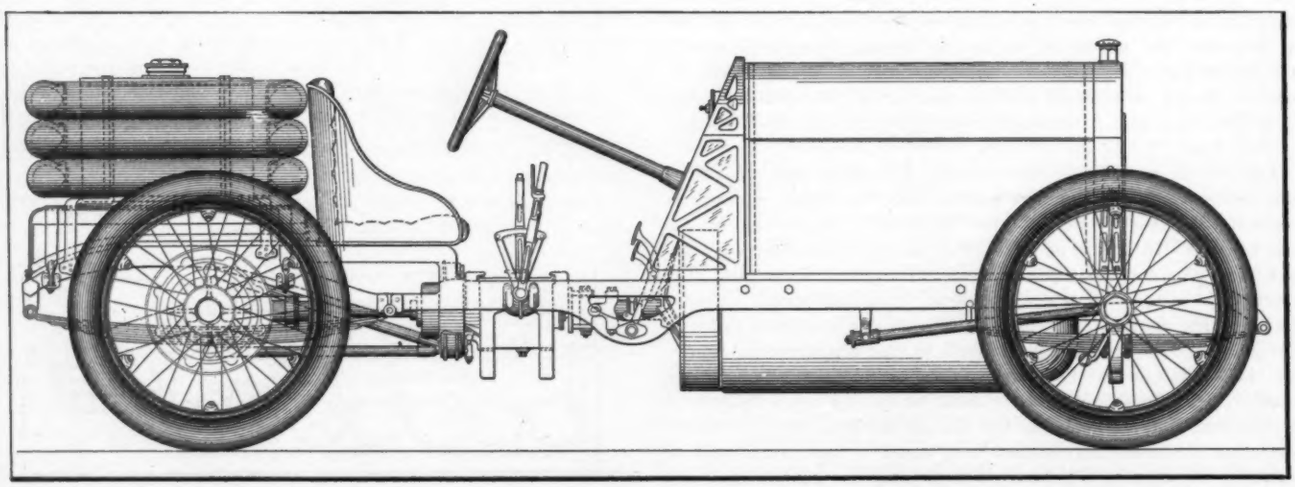


Fig. 70—Racing car design in which, to avoid back-pressure, no muffler is used; the same design shows a novel gasoline tank, and means for carrying spare tires

How New Drivers Can Reduce Tire Wear

By James S. Madison

AT this season of the year, many men and women are the proud possessors of their first automobiles. The car looks beautiful, the brass glitters, the varnish has a mirror-like surface, and the tires, in their attractive symmetry, seem indestructible and give no suggestion of the rapidity with which they will wear out, and no hint as to their capacity for trouble. Let the novice be assured that the time he will spend on keeping brass bright and the paint clean is out of all proportion to their value. He should realize in the beginning that it is far more important—in fact, most important—that he should give his tires his first, last and most intelligent attention. If he is a man of limited time and means, it would be more sensible and economical to neglect his brass until it resembles brass only remotely, than to neglect his tires.

The owner who does the latter, who fails to obtain all the information possible about the care of his tires, is inviting trouble, and will sooner or later pay a large price for his carelessness and ignorance. This information is not difficult to acquire; it is accessible to every one who will write to the tire manufacturer, asking for it. All the important manufacturers publish instruction booklets which they are glad to send to the user in the hope of enlisting his co-operation securing the best results.

The new owner should realize at the outset that the most expensive and the least permanent part of his entire equipment is the tires. He should make a simple calculation something like this: assuming that the tires will last for 3,500 miles and the cost of the new tires is $150, what is the tire-cost per mile? The answer is 4.3 cents. But this isn't all of it. With the most intelligent care, there will be punctures, gashes, sand blisters, with perhaps an occasional blow-out, rim cut, leaking valve, etc. These must be repaired; each repair will cost 35 cents or more at the garage, which will run his tire expense up to 6 or 8 cents per mile or even beyond that.

Of course, there are many tires that will give a mileage far in excess of this, but if the owner gets a greater amount of service, he should regard it as exceptional and be correspondingly thankful. He will be wise if he makes his calculation on the basis of the figure given. On the other hand, there are many tires that do not last as great a distance as this, due to improper care and driving on the new owner's part, rather than to defects in material or workmanship.

While it is true that the manufacturer will make an adjustment and supply new tires, in most instances at the consumer's price less the fixed and stated allowance for the mileage obtained from the old tires, yet this is usually a matter of great inconvenience, often resulting in the car being out of commission from several days to a week or more, depending upon the distance the owner lives from the factory.

There are a number of causes which induce the rapid deterioration of pneumatic tires. Of these, the two most important are: overloading and under-inflation.

How to Avoid Overloading—The novice asks "How am I to know whether my tires are overloaded?" There is only one way. Run the car on an accurate platform scale, and weigh it. Do not trust other people's statements as to the weight. They are sometimes false. The writer is familiar with a car that was described in the catalogue as weighing "approximately 1,650 pounds." The scales showed 2,000 pounds. The owner, in ignorance of the effect on his tires, added to his car a speedometer, an odometer, a clock, a heavy top with front, side and storm curtains, a complete line of tools, a heavy jack, a pump, extra parts, extra tubes, a tire repair kit, etc., so that with two passengers of average weight his tires were supporting 2,400 pounds! The size of the tire with which the car was equipped was designed to carry 1,800 pounds. The result was inevitable. His tires began to be troublesome when he had ridden 1,500 miles. By constant attention and spending much time in repairing, he worried along with them until the total mileage was 2,400, when the entire set was done for, and was sold as junk. Had he weighed the car at first, he would probably have been more cautious in making additions to it, and would have been saved continued annoyance and expense.

The following table, compiled from tire manufacturers' data, is intended as a guide to the novice. It gives the maximum weight each tires is intended to carry without being overloaded. These figures do *not* include the weight of the passengers:

Size of Tire	Weight per Wheel
2½ inch	225 lbs.
3 "	350 "
28 x 3½ "	400 "
30 x 3½ "	450 "
32 x 3½ "	550 "
34 x 3½ "	600 "
36 x 3½ "	600 "
30 x 4 "	550 "
31 x 4 "	600 "
32 x 4 "	650 "
34 x 4 "	700 "
36 x 4 "	750 "
32 x 4½ "	700 "
34 x 4½ "	800 "
36 x 4½ "	900 "
5 "	1,000 "

These figures are given only as suggestions; the owner should not rely upon them wholly, but should get the data direct from the manufacturer. Should he find that his tires are overloaded and that he is unable to reduce the weight of his car sufficiently by removing superfluous articles, he must make up his mind to get the greatest mileage from the tires, and then replace them by a larger size. This may be accomplished easily without going to larger wheels.

Many of the tire manufacturers are now offering for sale the so-called "odd sizes." They are made so that a 30x4" tire will fit perfectly a 30x3 1-2" wheel, or if a larger size is desired, a 31x4" tire may be placed on a 30x3 1-2" wheel. Other "odd sizes" may be obtained.

Under-Inflation Is Equally Dangerous—It is difficult, if not impossible, for the beginner to know just what is the proper amount of inflation for the tires, until he has gained a certain amount of experience that is necessary. One may easily make the mistake of not giving the tires sufficient inflation. By far the greater portion of tire injuries is due to this cause. On the other hand, it is easy to go beyond the proper point and give them excessive inflation. The result of the latter error is generally not long in coming, producing, in many cases, an explosion of the inner tube and casing simultaneously, which means complete destruction of both.

All books of instruction advise that the tires be kept pumped up until they will stand up round under a full load, but the difficulty often comes in knowing just when to stop pumping. One motorist, in inflating, keeps pumping until the tires, when struck with a hammer, give out a certain characteristic sound. Another one kicks them until they show a certain resistance. These are crude and dangerous methods.

The evils of under-inflation are much more numerous than those of over-inflation, although, as a rule, they do not show themselves so soon after an injury has been done. When the tire is soft from insufficient air pressure, the rubber is much more liable to be cut or gashed by every stone or other sharp-edged obstacle it meets. Even if there be no actual cuts or punctures, the fabric will be injured by being subjected to the great pressure momentarily brought upon a certain portion of it by striking an obstacle. Although no obstacles may be struck, the fabric will be injured, nevertheless, by the constant bending to

which it is subjected. This tends to break the fabric and separate the rubber from it. It is inevitable that such injuries, while not apparent at the time they are received, will result later in a blow-out. The beads of the tires will be cut, if the tire is soft, and punctures will be more frequent.

The Beginner's Safest Way—One safe method for the beginner to adopt is to have the agent or some experienced friend look at his tires every day until he himself can tell by the appearance and feel that he has the right inflation. The best way is the use of a pressure gauge.

Since different makes of tires of the same size require different pressures, the figures below are intended only as suggestive:

Tires	Pressure
2½ inch	45-50 pounds
3 "	50-60 "
3½ "	60-70 "
4 "	70-80 "
4½ "	80-90 "
5 "	90-100 "
5½ "	100-110 "
6 "	110-120 "

To learn the pressure in the tire at any time it is only necessary to unscrew the dust cap and the inner cap of the valve stem of the tire and attach the register, when the pressure is at once indicated by a pointer moving over a gradual dial. One of the popular forms of gauges can be attached to the pump and valve stem at the same time; the air that is pumped in passes through the gauge which shows the pressure at the end of each pump stroke. Another form can be attached to the valve stem only. If the reading shows under-inflation, the gauge must be unscrewed before the pump can be attached. It may be necessary to repeat this manipulation several times before the tire is properly inflated.

Whatever the type of gauge employed, it should never be used until it has been compared with the reading of a standard gauge. A similar comparison should be made at frequent intervals. In this way only can one be certain that if he wishes 70 pounds pressure he does not get 80 or more, due to incorrect registering. It is not uncommon to find that the small gauges read from 10 pounds under to 15 pounds over the correct amount.

A Sad Experience with an Incorrect Gauge—Recently, a friend of the writer pumped up his old tires to 70 pounds, as recommended, determining the pressure with a new gauge. During the night, when the car was standing idle in the garage, one of the rear tires exploded, ruining the casing. On comparing the gauge next day with a standard, he discovered that it read 15 pounds too low. This bit of information cost him $25.

New tires should be examined every day for a week or more to see that the proper pressure is maintained, because the casing stretches slightly for about that length of time before it finally reaches the normal size under actual running conditions.

After the novice has provided means to guard against over- and under-inflation, he must always bear in mind that there are a number of other causes that may injure his tires. He will find it an advantage after every trip to run his hand over the entire surface of each tire for the detection of any possible nails, tacks, and wire ends, which may have been picked up and imbedded in the rubber. This precaution will save him many punctures.

He should at frequent intervals examine the entire surface of each casing for small cuts or gashes; if they penetrate the rubber through to the canvas (fabric) they should be vulcanized at once. Every particle of dust, sand or water that forces its way into an opening of this kind will damage the tire and shorten its life. If by accident grease or oil should get on the tires, it should be removed with a rag or waste moistened with a little gasoline. The owner should be sure, especially when the car is being washed, that none of the water gets into the inside of the casings. Moisture weakens the canvas which will finally rot, with the inevitable result—a blow-out. It will also cause the rims and side rings (in detachable tires) to rust.

Method of Procedure in Hot Weather—During the hot days of summer, the car should never be left standing in the direct sunlight. Whether the car is to stand for a short or a long period, a shady spot should be selected. In addition to the destructive action of sunlight on the rubber, the heat causes the air to expand, producing a greater internal pressure, and increasing the tendency to rupture.

On a hot day, the tires should not be pumped up as hard as they are during cooler weather. The rear tires are subjected to greater strains than the front ones, and begin to show the wear first. When this happens, it is advisable to interchange them with the front ones, and thus equalize the wear. Should a tire become deflated while in motion, the effects on the car are of such a character as to be clearly distinguished. If it is one of the front tires, the driver will at once experience difficulty in steering; if it is one of the rear's, the car acts as if it were being held back, or going over a soft or "greasy" piece of road. The sooner the car is stopped under these conditions, the better.

The car should never be run on a deflated tire even for a short distance, for, in a great majority of cases, the shoe will be ruined. Less damage will be done by removing the tire and running cautiously on the rim of the wheel. This, however, should be resorted to only in great emergencies. It is a better plan to wrap a piece of rope around the rim and felloe until the former is well covered.

Much damage to the tires is often unconsciously occasioned by the method of starting and stopping the car. Every time the car is started too suddenly, every time the gear change is made with a jerk, and every time the brake is applied too rapidly, the life of the tire is shortened a definite amount. Many drivers wishing to make a stop do not decrease the speed until within a short distance of the stopping-place, when they throw out the clutch and jam on the brake, making a very pretty stop in a few feet. This is a mild variety of grand stand play, but the driver who does it is taking life out of his tires every time.

Easy on the Corners Means Easy on the Tires—The period at which the very greatest strain is put on any tire is when it is rounding a corner at high speed, which is another excellent way to cut the life of a tire in half. The prudent driver will always turn a corner cautiously and slowly.

Tires frequently become very much heated during a long run. In many cases the heating is due not only to the natural friction between the rubber and the inequalities of the road bed, but also between the inner tube and casing. This may be largely eliminated by rubbing a good quality of finely pulverized talc on the canvas of the casing and over the inner tube before it is inflated. Should the tires become very warm, it is advisable to stop and allow them to cool.

Avoid running in street car tracks—they were intended for wheels made of iron, not rubber. Every owner should purchase as part of his regular equipment a vulcanizer, as he will thus be able to make his own repairs and save the expense, delay and annoyance of taking his car to the garage every time he finds a cut or puncture. The method of procedure is so simple that anyone may learn it in a few minutes. In the course of a year, the owner will save the cost of the vulcanizer several times over.

When on the road for a short trip, one should carry an extra shoe and two extra tubes; or if he does not wish to go to the expense of the shoe, one or two blow-out sleeves will usually see him through. In addition, he should always carry a jack, pump, some tire-tape, rubber cement, rubber patches, talcum, extra valves for the valve stem, and washers.

A Smoking Tip—Automobilists planning tours into France will do well to note a new rule laid down by the Director of the French Customs Office, applicable to those who smoke. After May 1 tourists will be allowed to take with them only half the amount of tobacco formerly permitted for personal consumption. Ten cigars, twenty cigarettes, an ounce and a half of tobacco, is the limit, and the tourist must choose one of the three, and not all three. Moreover, the Director refuses to recognize the right of a woman to smoke, and they will be unable to aid their male companions by carrying extra supplies.

LETTERS INTERESTING AND INSTRUCTIVE

GAS ENGINE IGNITION

Editor THE AUTOMOBILE:

[1,914]—Will you kindly tell me in "Letters Interesting and Instructive" if the current from a small dynamo could be used for ignition on a large gas engine, and if so, how should it be arranged? H. Y. Z.
Joplin, Mo.

You give so little information about the dynamo that the question is a hard one to answer. The ordinary current generator gives too low a voltage and at too high an amperage. If your voltage and amperage were correct, the addition of a spark coil or Rhumkorff coil, as it used to be called, and a timing device, would give a spark that would run the engine in a satisfactory manner. The ordinary magneto producing a true low tension current, which is intensified by means of a spark coil, gives about 35 volts at less than one ampere. If this be taken at exactly one to allow of some figures on the subject, the coil output will be, disregarding losses, say 20,000 volts at .15 ampere. This is upon two assumptions, namely, that the dynamo is a direct current machine, and that the field is separately excited, at least for starting. The latter statement is plain, if you consider that for starting purposes with a self-excited machine, a spark sufficient to ignite a charge is practically impossible, because of the very slow speed (comparatively) at which the operator can turn the engine over, with the consequent slow speed at which the current would begin to build up.

Next, as to the exact time of the spark produced by the outfit, if the engine does not already include such an apparatus, you will have to construct one yourself. To be exact, the current supply must be interrupted just before the point in the stroke at which the spark is desired in the cylinder. This might be done by purchasing an ordinary timer on the market, and rigging it up on the machine so that the speed is correct for the engine in question. This will differ with the number of cylinders, whether one, two, or more, and also, upon the cycle of action, that is, whether two or four cycle.

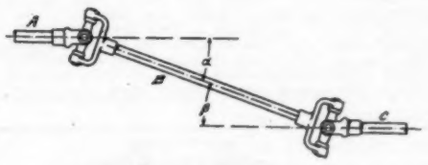
UNIVERSAL JOINT TROUBLE

Editor THE AUTOMOBILE:

[1,915]—Does a universal joint give uniform rotation at the rear axle? My car has double universal joints, and recently when the rear axle was removed and replaced, the slip joint was given a quarter turn in relation to the forward joint. Now with it in use, I fancy that I detect a surging effect in climbing hills on the second gear. Was not this matter discussed in one of the recent numbers of "The Automobile," and if so, in which one? B. S. H.
New York City.

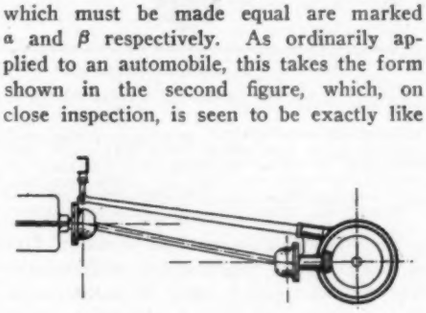
The surging which you mention would not be caused by the quarter turn which the rear joint was given, as this ought not to affect the relative rotation at all. If there was a noticeable surging effect, that is, if you are sure that you detected one, it must be due to wear in some of the universal joint pins, this resulting in a lag and then a consequent surging forward to take up the lag.

A paper on the Limitations of the Universal Joint was read by H. Vanderbeek at the September, 1908, meeting of the Society of Automobile Engineers, and reprinted in the October 8, 1908, issue of THE AUTOMOBILE, beginning on page 501. The point is made herein that the proper



Correct Arrangement of Joints

placing of two universal joints at the two extremities of a sloping shaft mutually correct the inequalities of each of the joints used singly. This proper placing amounts only to making the angle of the two shafts at the upper end exactly equal to the angle between the two shafts at the lower end, which is shown in the figure reproduced herewith. In this figure, the two angles which must be made equal are marked α and β respectively. As ordinarily applied to an automobile, this takes the form shown in the second figure, which, on close inspection, is seen to be exactly like



Same Form as Applied to a Car

the first one. The point not brought out above, but assumed, is that the three shafts are in the same vertical plane. If this is not true, none of the above holds good.

You will also find something of interest on this same subject contained in the paper Transmission of Power from Engine to Road Wheels, by L. A. Legros, in the May 13 issue of THE AUTOMOBILE. In this paper, on page 782, under the heading of Propeller Shafts and Bevel Gears, the author discusses the subject of universal joints, or, as he calls them, Hooke's joints, very thoroughly. The writer brings out the excellent point that the combination of two joints, one at each end of the propeller shaft, necessitates the use of torque rods, which is not the case with one joint.

POWER WITH TWO SPARKS

Editor THE AUTOMOBILE:

[1,916]—Will you please advise me on the following point? I have a four-cylinder car with double ignition. Now, would I gain anything by wiring the two plugs in the cylinders together, that is, would a spark at two points in the combustion chamber give more power than at present, or would it tend to make trouble in some other way?
New York City. H. S. B.

If you mean, would two sparks occurring simultaneously, increase the power, there is no question about it, the power would be increased. If you are able to so time the two sparking devices that the sparks occur at exactly the same instant, the power will be increased by an amount equal to about 15 per cent.

The reason for this is that the speed of propagation of the flame is much greater with two sparks advancing from two different sources toward a common center than would be the case with a single source from which the flame advanced to the center, and then beyond to the other side of the combustion chamber, and finally back to the center again. This, of course, is dealing in infinitesimals, but the effect is very marked. In last week's issue of THE AUTOMOBILE an article was given in which this subject was discussed very thoroughly, the result being, in that case, namely, on a four-cylinder Clement-Talbot engine of 85 mm. bore by 120 mm. stroke running at 1,100 revolutions per minute, the indicated horsepower was 18.4 using but one spark plug, and 20.8 using two plugs, a gain of 13 per cent. At a higher speed of 1,600 revolutions, the increase due to the use of the extra plug was practically the same in percentage, although in actual amount added it was more, the figures being 26.0 with one and 29.3 with two plugs.

The increase in power required to furnish two sparks is negligible, so that the only source of trouble is the exact timing necessary in order to get the beneficial effect. This being a mere matter of mechanical detail and requiring but patience to correct, may be dismissed with a word. If the increase in power with two spark plugs does not materalize, look to the timing and keep on looking until the latter is perfected, when the desired result will be forthcoming.

MAKE AND BREAK ACTS FUNNY

Editor THE AUTOMOBILE:

[1,917]—Will you please explain the following trouble which I have had lately with my make and break igniters. I took them all out, and after cleaning, put them back as per instructions with a 3-16 space between the hammers and the plugs. When the engine was started, it would run, but missed badly on a retarded spark. The throttle had no effect upon the missing, whether advanced or retarded. One-half or more advance of the spark and the engine would run fine. The most puzzling thing about it was the

fact that with three cylinders cut out, the engine which had previously refused to fire, would fire and run in the best of shape on the one cylinder remaining, even with the spark retarded. G. S. H.
Buffalo, N. Y.

The two statements are rather conflicting, that the engine missed badly on a retarded spark with all four cylinders, and ran fine with spark retarded on but one cylinder, so lay that aside.

Your source of trouble evidently lies in the igniters themselves, as nothing is said about the source of current beyond the statement that under certain conditions the engine runs fine, which presupposes a good source of current. Now, it would appear that the igniters were badly worn so that the distance advocated by the manufacturers and correct when the car was new, no longer held good. Therefore, you should set the points closer to the hammer than the directions call for, but your last statement would seem to indicate that all of them had not worn alike, one being still in good condition.

The proper method of procedure in a case of this sort, in which you have a good current supply, and apparently no other trouble than bad timing, as your statement indicates, is to put one cylinder on the firing point in the stroke, and then adjust your spaces until that cylinder fires. Having fixed one cylinder, adjust the other spaces to the same distance as was correct for the first case. If the igniters have worn equally, as is usually the case, this will allow all cylinders to fire correctly. If not, the wear has varied and each cylinder will have a separate adjustment.

Another source of trouble in a low-tension ignition system using make and break is the spring tension, and although this did not bother you this time, it is well to remember in future cases.

CRANKSHAFT SIZES AGAIN

Editor THE AUTOMOBILE:

[1,918]—Being a designer of automobiles and greatly interested in the letter (1881) in the May 13 issue of "The Automobile," I will ask you to repeat the formula given there and explain what the letters used therein represent. S. L. HEILMAN.
Boyertown, Pa.

The formula given in the issue mentioned was given under protest, as we deprecate the use of empirical formulæ, particularly in such places as the crankshaft. However, the two requested are here repeated.

For a five-bearing shaft:

$$\text{the crank pin diameter} = \sqrt[4]{\frac{P^2}{43.4\ S}}$$

and for a three-bearing shaft:

$$\text{the crank pin diameter} = \sqrt[4]{\frac{P^2}{37.5\ S}}$$

in which:

P = the maximum total pressure, which will always be the explosion pressure.

S = the tensile strength of the material used, in pounds per square inch.

CAUSE OF A BAD KNOCK

Editor THE AUTOMOBILE:

[1,919]—Will you please help me to solve a very puzzling case of knocking? My engine is a four-cylinder water-cooled machine of 15-horsepower. When put away last fall it was working well. After six months' idleness, it now develops a bad knock up hill which can only be eliminated by retarding the spark, but when that is done, the engine dies. The effect is the same on level ground if the throttle is opened more than one-third. Would the level of the gasoline in the carbureter have this effect, as I may have disarranged it while cleaning the machine. I have tried more air, less air, more gasoline, and less gasoline, but all without avail.
Somerville, Mass. SPARK GAP.

The effect of change of jet elevation, that is, change in the height of the spray nozzle, was fully discussed in letter No. 1,876 of the May 13 issue of THE AUTOMOBILE. The point there brought out seems to apply to your case, and thus indicate a cure for your trouble, so it is quoted here: "By raising the spray nozzle, you lower the level of the gasoline relatively. Therefore, the liquid will be less sensitive to the suction, which would reduce the amount of gasoline used. At low speeds, there would be a tendency *to starve the engine, which would also be noticeable on hills.*"

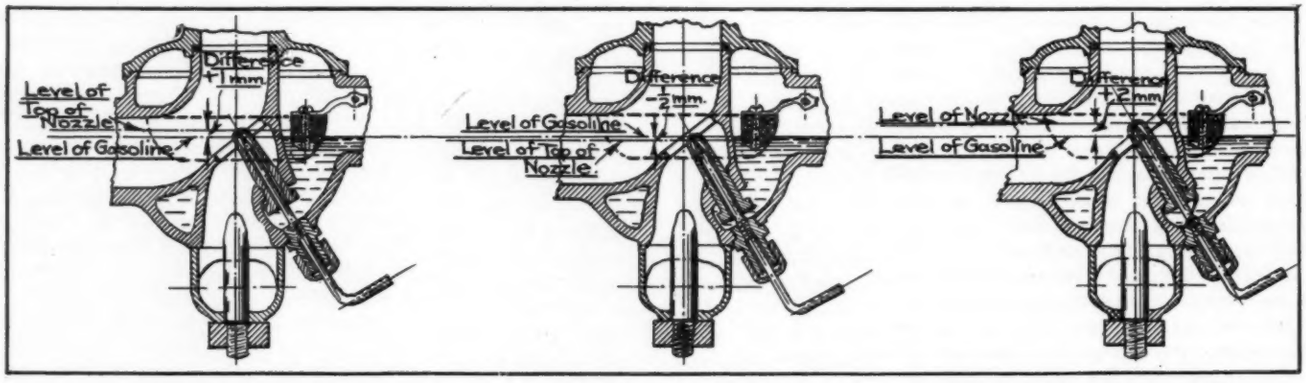
The italics bring out the point, and we think show you what the trouble is, namely, that you have inadvertently lowered the spray nozzle so that the engine does not get enough fuel at slow speeds and on hills. By raising this a small amount, the engine will be able to suck up more fuel and you will find that the trouble ceases with the change. In making this, be careful not to lower the nozzle too much at once, as the effect then is just as bad, the carbureter flooding at the slightest provocation. The better way would be to lower the nozzle a very slight amount, say one-quarter of a millimeter, or perhaps one sixty-fourth inch would not be too much. Try this level out very thoroughly, and when you are satisfied that it is not right, alter the level once more. The experience that you will get during the process will be worth all the time taken up in the series of successive adjustments, instead of trying to arrive at the result in a single or possibly two adjustments.

MANUFACTURER'S OPPORTUNITY

Editor THE AUTOMOBILE:

[1,920]—Kindly give me the addresses of all the manufacturing concerns engaged in the manufacture and sale of gasoline motor cars to operate on railroads, tramways, and industrial steel tracks for every purpose whatever. G. POWERS.
Queretaro, Estado de Queretaro, Mexico.

It will be necessary to make two lists in answer to this request, as many makers of cars for tramways and industrial tracks do not make railroad cars.



Correct nozzle position — Low location causes flooding — High position starves engine

Section of Typical Carbureter Showing Variations in Nozzle Level

Manufacturers of gasoline railroad cars:

Union Pacific Railroad Company, Omaha, Neb.
McKeen Motor Car Company, Omaha, Neb.
Sheffield Car Company, Three Rivers, Mich.
Buda Foundry & Machine Company, Chicago, Ill.
Milwaukee Gasoline Locomotive Company, Milwaukee, Wis.
Termatt & Monahan Company, Oshkosh, Wis.
Stover Carriage Company, Rockford, Ill.
Strang Gas Electric Car Company, Hoboken, N. J.

Makers of other gasoline-driven cars:

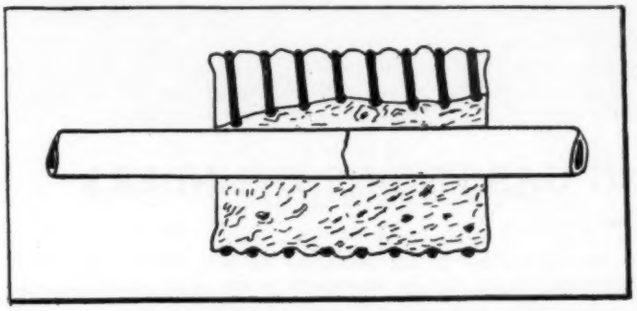
Sheffield Car Company, Three Rivers, Mich.
Empire Manufacturing Company, Quincy, Ill.
Jeffrey Manufacturing Company, Columbus, O.
Buda Foundry & Machine Company, Chicago, Ill.
Avery Company, Peoria, Ill.
Youngstown Car Manufacturing Company, Youngstown, O.
Arthur Koppel Company, Pittsburg, Pa.

There may be many other firms in this line which we have missed, but for their benefit the inquirer's address is given in full, and they are at liberty to write to this party direct. Similarly, if any firms have been included by mistake, this was done with the best of intentions, the inquiry as a whole being somewhat out of our line.

WHAT TO DO WHEN THE FUEL PIPE BREAKS

By D. R. HOBART.

BREAKS in the fuel pipe are responsible for a large proportion of fires that occur on automobiles, by reason of the escaping gasoline being ignited by contact with a hot exhaust pipe or by means of an electric spark due to a short circuit of the ignition current. If the autoist is not provided with a soldering kit and a garage or plumber is not within reach, ordinarily he must submit to the ignominy of being towed. On the other hand, there are a number of ways of temporarily repairing the broken pipe



Fuel Pipe Effectively Repaired with Cork

which involve common objects in connection with the spares ordinarily carried, and by employing one of these the delay inevitable to the breaking of the pipe will be shortened and the car can proceed to where a permanent repair may be made.

While the stopping of the leakage in a broken pipe is important, the main object of the repair is to continue the supply of fuel to the carbureter. The broken ends must be held together in order to accomplish this, and short of brazing the pipe, there are three methods which can be used to hold it temporarily. These are: the splint, in which the ends are held by splints in the same manner as in surgery; the jacket, in which a wooden or other jacket is employed; and the "wrapping" method, where the ends are retained in place by tire tape or metal. In effecting any of the following repairs, the fuel should be shut off, and if any heating is to be done, the pipe should be removed.

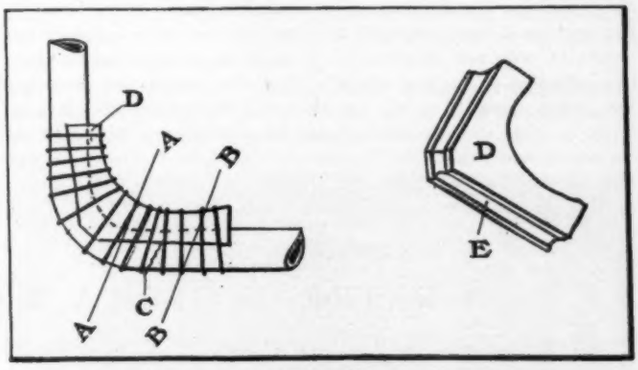
Repairing by the Splint Method—Where the break in the pipe occurs in a straight portion of its length, the broken ends may be retained in their proper relation to each other by means of splints cut from a lead pencil or some other convenient source, the operation being conducted as follows: The broken ends are well soaped and placed together and the splints put on, steel or copper wire being wrapped around the splints as tightly as possible with the pliers. A wrapping of tire tape should be put over the whole as a further precaution. This repair will be effective for cars using either gravity or low-pressure fuel feed, but in the latter case, care will have to be taken in driving.

While a splint repair will hold for a considerable length of time, it is not so permanent as one made by the "jacket" method, in which the broken ends of the pipe are held in place by a wooden or rubber jacket, either shrunk on or fastened by means of wire or cord. A repair by this method, which employs inexpensive and readily obtainable materials—an ordinary cork and some copper wire—will be practically permanent, and is effected as follows: Having obtained a cork of sufficiently large size, a hole the size of the pipe is cut in it. The broken ends of the pipe are well soaped and the cork pushed over them so that the ends are supported as in the sketch. Wire is next wound tightly around the cork, and the latter is then thoroughly impregnated with water. As a result, the cork swells and grips the pipe tightly. In preparing the cork, the cutting will be rendered easier if the knife or chisel is kept moistened with water from time to time. Outside of excessive heat, the cork will stand any kind of treatment to which the pipe may be subjected.

Shrinking On a Tube Over the Break—Another means of repairing the broken pipe is to shrink a piece of tubing over it. On the majority of automobiles, the fuel pipe is standard one-quarter inch pipe size, but plumbers and hardware dealers have copper tubing which is designated by the outside diameter instead of the nominal inside diameter, as is the case with standard sizes. The standard one-quarter inch pipe measures .405 inch on its outside diameter, while the one-half inch outside diameter pipe measures .402 inch on its internal diameter. By properly heating the latter pipe, it can be expanded until it is sufficiently large to be placed over the former, and when cool will contract and firmly grip it, the two pipes forming practically one piece. The procedure in shrinking on the pipe is as follows: the broken pipe is first cleaned and kept free from dirt by wrapping in a cloth. The half-inch pipe should be annealed by heating to a red color and then suddenly cooling in water. In this respect copper is different from iron and steel, as these latter are annealed by heating and allowing them to cool slowly. When the tube has been annealed it is heated to about 700 degrees, when it will expand sufficiently to be slipped on over the pipe. The wrappings are now removed from the pipe and the tube slipped over it and allowed to cool slowly, when it will grip the pipe. The autoist can replace the pipe and go on his way confident that the break will not occur again at that point.

When the Break Occurs Near a Bend—When the break occurs near a bend in the pipe, the repair is best made by a splint or block grooved to fit the pipe and fastened in place by wire. In the sketch, the break is shown at C and the grooved block D is shown in position attached to the pipe. The groove E is easily cut with a knife and should approximate the shape of the bend. If the pipe does not fit exactly, bits of tire tape should be put around it to assist in holding. After the wire has been applied, a final wrapping of tire tape should be put on around the portion AA-BB. The back of the block should be concaved, so that the wire will not work off the ends. A similar arrangement can be made when the break occurs in the bend.

Temporary Repairs to Breaks in Unions—Ordinarily a break in a union occurs close to the male connection, with the result that the released pipe springs away from the joint and cannot be retained in its proper position again with reference to the connection without soldering. For a temporary repair, the



Repairing Break Near Bend with Wood Splint

male connection should be removed from the union and the pipe wrapped with twine or tire tape close to the break. The broken end should then be thrust into the female connection as far as it will go and the union nut screwed up tight, expanding the tape or twine which will grip the pipe and prevent it from coming away for a short time. Copper wire can be used when neither tape nor twine are available, but the latter are to be preferred as giving better grip than the wire.

Two Repairs by the Wrapping Method—Occasionally the broken ends of the pipe will stay in their proper relation to one another when a wrapping of tire tape is applied, without the use of splints, etc. When tape is put on it should be wound as tightly as possible and reversed at intervals like a surgical bandage, so that the pull of both ends of the pipe will come on all portions of the tape. A more permanent repair by the wrapping method consists in tinning the pipe for some distance in both directions from the break and wrapping a ribbon of copper or brass spirally over the tinned portions, reversing the ribbon at intervals as when using tire tape. This necessitates the employment of a soldering iron or some substitute therefor.

An Easily Constructed Roadside Forge—When soldering is to be done and a blow torch is not at hand, the autoist can construct a "forge" from the dirt on the road, making a circular mound, say about eight inches high and a foot in diameter, saturating this with gasoline and setting it on fire. The soldering iron can be heated in this dirt "forge" just as well as in an ordinary shop forge, and the fire will continue to burn for a surprisingly long time. In making up a fire such as the above, care should be taken to locate it at the side of the road in a sheltered position so that a gust of wind will not scatter the flaming dirt over the car and cause a conflagration. As soon as the operation is finished, the flames should be smothered with dirt and the "forge" broken up and scattered over the road.

Wrench Handle Can be Used as Soldering Iron—An excellent substitute for a soldering iron is the steel handle of a wrench or the blade of a screw-driver, the handle or blade being cleaned and tinned in the same manner as the regular iron. By keeping a wrench with the handle ready tinned, the soldering iron can be dispensed with, and its place in the tool-roll given over to another tool or to tire tape, twine, etc. As regards solder, ordinary electric fuse wire will serve the purpose equally well, and can often be obtained from electricians and hardware dealers, who carry only the large bar solder. Solder in any form is, of course, equally efficient, but the strip form is to be preferred.

CONCERNING THE OFFSETTING GAS ENGINE CYLINDERS

By COKER F. CLARKSON, A. L. A. M.

THE invention and development of the gasoline automobile has brought about the evolution of an engine which differs from the gas engine of the stationary type in as marked degree as the latter differs from the steam engine. Though a dozen years ago the stationary gas engine designer would have ridiculed the idea of successfully producing a gas engine weighing less than ten pounds per horsepower developed, this, and more, has now been accomplished. It is futile to expect that automobile engineers will ever be thoroughly in accord on a subject involving so many opportunities for detail differences as automobile motor design; though, of course, years of experience have resulted in a type of construction followed so closely in such a larger number of instances as to warrant being termed standard practice in this respect. Whether taken singly or collectively the cars produced by the members of the Association of Licensed Automobile Manufacturers reveal more accord than difference in design.

The ordinary way of placing automobile engine cylinders with relation to the crankshaft (whence, of course, the power is taken off) is medially over the axis of the crankshaft. But for years, several years in some instances, some cars have had cylinders offset with relation to their crankshaft, that is, in a position wherein the center line of the cylinders is not opposite but to one side of the axis of the crankshaft. This difference in practice raises a very interesting and much discussed subject. It has been said that inasmuch as a gasoline motor crankshaft revolves in only one direction, it is mere common sense to place the cylinders in such a position that the pistons will transmit the power impulses to the crankshaft most effectively, that is, offset so that the maximum force of explosion is delivered on the piston when the crank is past the top vertical center line and therefore in the best position to receive it, and the pressure on the cylinder wall during fifteen to thirty degrees of the firing stroke is, owing to the reduction of side-thrust, diminished. While this statement may be true, it is apt to be misleading, and in any event is not the only consideration. There are very positive advocates both for and against offset cylinders. Among the advantages claimed for offsetting are: Shorter connecting-rods, reduced wear, lighter construction, reduced friction between the pistons and cylinders on the power stroke, more direct turning effect on the crankshaft, less likelihood of a knocking motor, less shock on the engine bearings, less overall motor height necessary, greater motor flexibility and appreciable increase in power.

On the other hand it is said by those who prefer the construction wherein the cylinders are placed medially opposite the crankshaft that the claimed advantages of reduced side-thrust on the power stroke and more direct turning effect on the crankshaft have not much more than a theoretical value; that in T-head motors, with their two camshafts, offset cylinders involve complication desirable to avoid; and per contra statement above, that knocks are more common and wear is greater than in the usual type of engine. Further it is said that the offset becomes less advantageous at high engine speeds. Perhaps the most commonly advanced argument against offset cylinders is that the engine is thrown out of balance when they are used.

The controversy comes down to these two general positions, namely, on the one hand that in properly proportioned design it is unnecessary to offset cylinders in order to take care of the alleged counterbalancing advantage of doing so, less side-thrust on cylinder walls on the power stroke, etc.; and on the other hand that if an engine with offset cylinders is made as it should be, certain distinct advantages which have been suggested above are gained and clearly counterbalance any consequent disadvantages there may be.

A RATING FORMULA WHICH CONSIDERS STROKE

IN conjunction with the constant stirring up of the subject of empirical formulas for rating automobile and similar engines, one advanced by the well-known English manufacturers, Rolls-Royce, Limited, seems to possess some merit. This includes the use of the stroke, a point, the omission of which in the now standard formula has puzzled many.

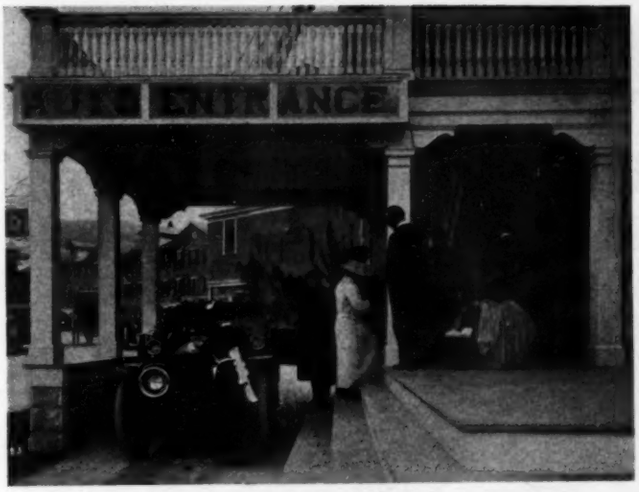
The English makers propose that engines be rated at the power deduced by the use of the formula:

$$\text{Horsepower} = .25\ (d - 1\text{-}2)^2 N \vee s$$

in which d denoted the diameter of the cylinder in inches, s, the length of the stroke, and N, the number of cylinders employed. As most of the engines in use in this country are of the four-cylinder variety, the figure for N is nearly always four. Then multiplying by .25, which is equivalent to dividing by four, and then later multiplying by four again, is needless work. So for four-cylinder purposes, the formula reduces to:

$$\text{Horsepower} = (d - 1\text{-}2)^2 \vee s$$

Using this, the power rating from 4 by 4, 4 by 4 1-2 and 4 by 5 engines, all of which would otherwise be rated at 25.6, would be respectively 24.5, 27.2 and 30.



A Stop at Mt. Washington Hotel, Bretton Woods, N. H.

IMPROVING WHITE MOUNTAIN ROADS

BRETTON WOODS, N. H., June 14—Good news for automobile tourists is coming through the Crawford Notch and over other roads leading to this place, for gangs of men are now at work repairing them for the season. John Anderson, of the Mount Washington and Mount Pleasant hotels, says:

"The State of New Hampshire has taken a great interest in the highways leading to Bretton Woods, especially through Crawford Notch, where an enormous rock fill is being made to ease the grade at the foot of the last steep climb approaching the 'Gateway.' The walls at the top of the pass, at the crown of the hill, are being blasted out to widen the gap, and the rock thus obtained is being used in making the fill. The road will be nearly 20 feet wide, double its former size, and yet so carefully is the blasting being done that not one out of a dozen of those coming up will notice any change in the rugged grandeur of the pass. The sheer wall at the very gate of the Notch will not be touched. 'Tug-of-war Hill,' which formerly was a terror to autoists, was made easy by order of the State last year, and the work this year will remove the last serious difficulty in the passage of the Notch.

"From the Wiley House to Bemis the road is being widened and the curves straightened, under the supervision of H. S. Mudgett, of the Intervale House, and considerable progress has been made. It is planned to make the road 15 feet wide at the narrowest places and 18 feet wherever it is possible. So much stone has been moved back in widening that the appearance now is of a stone wall on each side of the highway. All of the roads in this section wintered extremely well and are in good condition now. Three automobile parties have been at the Bretton Arms already, and we expect the Albany Automobile Club to be here on June 23 on its annual tour. In riding through the Notch a few days ago we saw a deer standing in the road only a short distance ahead of us."

FROM A TOWN IN NOVA SCOTIA

ANNAPOLIS, N. S., CANADA, June 7—Automobile drivers in this town have agreed to keep their cars off the public highways on Saturdays and Sundays between the hours of 9 A. M. and 5 P. M. This peculiar condition has been brought about through proposed legal action on the part of the municipal council to prohibit the use of automobiles in Yarmouth County on these days between 8 A. M. and midnight, thus giving the autos the right to be used only during the early hours of the morning. Something sidetracked the measure, and to prevent the necessity of an extra session to take up the outstanding measures, the autoists themselves made the agreement. Notices will be posted in the hotels of the county.

AMERICANS TOURING EUROPE IN PLENTY

PARIS, June 3—The rush of American automobile tourists to Europe this year commenced much earlier than usual, and to judge from present indications will be a record one. The tendency of the last two years for automobilists to bring over their own cars is more pronounced than ever, and there will doubtless be few leading American firms that will not be represented by touring parties this summer. The Packard still holds the lead as the American car most generally employed for foreign touring. H. D. Wilson, the European representative of the company, declares that at the end of May he had been in touch with 57 different parties touring Europe in Packard cars, this being a remarkable number when it is considered that the touring season is not supposed to begin until the middle of June. The number, of course, does not include all Packard cars running through Europe, for many of the tourists having no need of either spares or touring information do not report at headquarters. Among those having reported during the past month are two directors of the company—Russell Alger, who has just purchased a Wright aeroplane, and Phillip McMillan; Truman H. Newbury, ex-secretary to the navy; Charles M. Schwab, Thomas Nelson Page, the author; A. S. Carhart, of Tuxedo, and Edgerton Winthrop.

The Pierce agent, N. F. Goodsill, also reports an increased number of visitors to the company's touring bureau in the Avenue de la Grande Armée, Paris. A third American firm to establish an American depot for spare parts and touring information is the Peerless Motor Car Company, whose Paris depot is located at the new American garage in the Rue du Mont Thabor, in the center of the hotel district, in charge of Manager Bousquet. Among the other firms not possessing European touring offices, but whose cars have been reported in the city garages during the past few weeks are White, Locomobile, Thomas and Rambler.

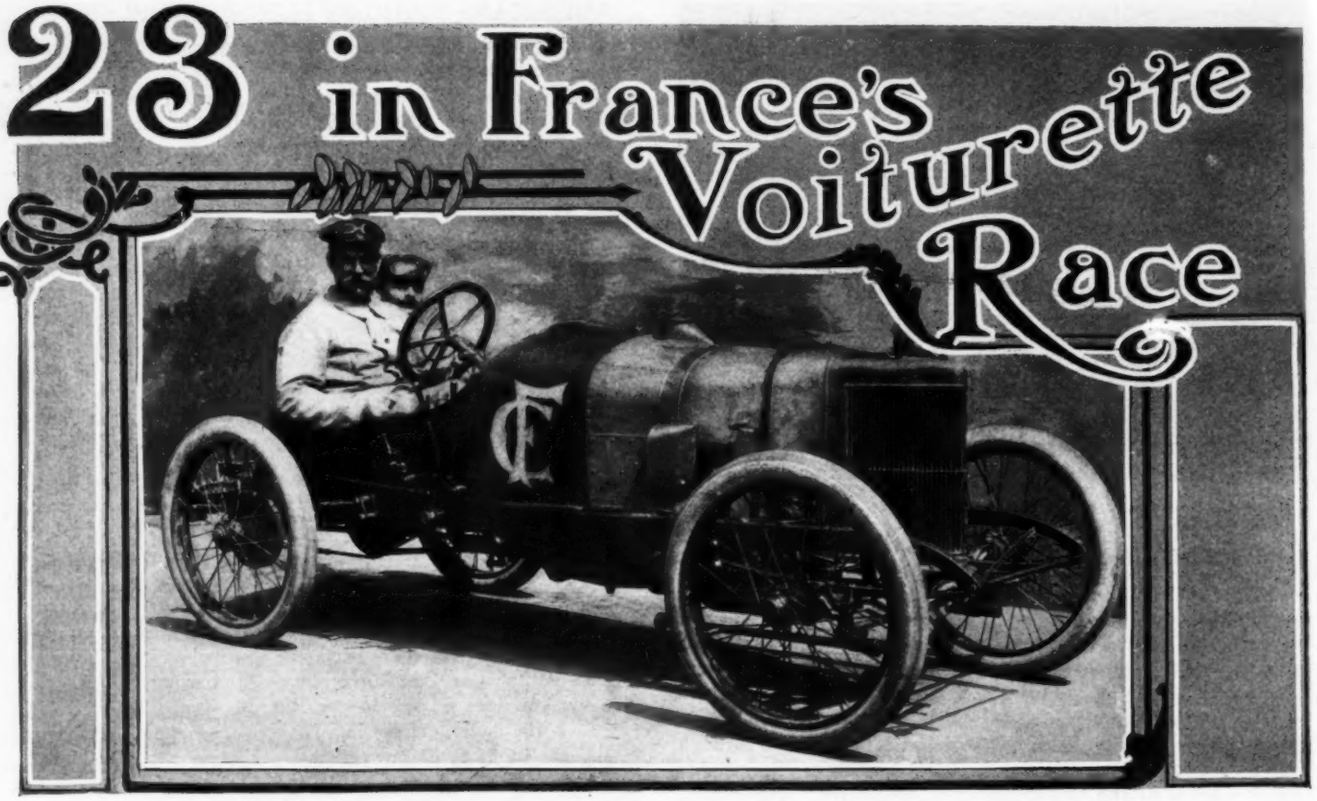
ST. JOHN AUTOISTS ASK CARE IN TOURING

ST. JOHN, N. B., CAN., June 7—Legislation against automobiles has been threatened for some time in New Brunswick, and the New Brunswick Automobile Association has taken steps to prevent the necessity and to quiet any demand for it. The club has issued a circular to be distributed at all ports of entry, so that visiting autoists will have their attention called to the law regarding speed, and especially to the use of caution in passing teams. Trouble has occurred too frequently in the latter case, and is the principal cause for complaint. Furthermore, some advertising will be done in the press, asking that all offenders be reported to the association, and this body will make prompt inquries, and if necessary prosecute. It is considered that the delays in stopping for teams will not greatly affect tourists, for there are many roads in this province where a car can be driven for 15 or 20 minutes at a time without meeting horses.

At the recent annual meeting of the automobile association it was decided to offer prizes to the three road commissioners effecting the greatest improvements in their respective sections.

The Commodious Garage of the Mt. Washington Hotel

23 in France's Voiturette Race



Manufacturer Crespelle, a Newcomer in the Racing Game, at Wheel of One of His Voiturette Racers

PARIS, June 10—Twenty-three small cars will start in the voiturette race at Boulogne-sur-Mer on Sunday June 20, the only pure speed contest to be held in France this year. For a long time it looked as if the solitary race was doomed to failure, for the entries stood at six for several weeks, and it was only during the three days preceding the final closing that the number was run up to 23. France, England, Belgium and Spain are the countries represented, the first-named having the majority of entries, the others being content with one team each.

Unlike the previous voiturette races in France, one-lunger racers will not be in the majority this year. Lion-Peugeot, whose recent successes at Barcelona and in Sicily have made them the favorites for the Boulogne race, will present two single-cylinder cars and one twin-cylinder. The one-lungers are special productions with a bore of 3.9 inches and a stroke of 10 inches; as on all the special racing cars, they will have enormous valve area, but instead of a single inlet and exhaust, which is apt to give trouble by reason of warping, there will be three of each, operated by an original type of rocker arm. The two-cylinder car has a bore of 3.1 inches and a stroke of 7.8 inches. Although this car has won the two previous races of the year, it is slightly inferior in speed to the one-lungers from the same factory, its victory in Sicily having been due to its companion running out of gasoline, and at Barcelona to the breaking of the road wheels of both its team mates. All three cars develop about 35 horsepower, and can easily maintain a speed of 60 miles an hour on the straight away.

Thomas, the ex-motorcyclist, will handle a Le Gui voiturette with a single-cylinder De Dion motor of 3.9 by 10 inches bore and stroke. Maurice Fournier, younger brother of the better known Henry Fournier, will take the wheel of a Werner fitted with an engine similar to that of the Le Gui. Three Crespelle cars, newcomers to the racing game, will have practically the same power plant. The French firm Alcyon will this year put its faith in four-cylinder cars, having the minimum bore of 2 1-2 inches and the maximum stroke of 5 1-2 inches. The chief driver is Barriaux, an old voiturette hand, with a couple of team mates yet to be chosen. Renault-Schneider, a St. Etienne firm, is an entirely newcomer to the automobile world, and intends to make its debut on the race track with commercial models of 2.7 and 4 inches bore, which have little chance of winning first prize.

England is represented for the first time in a French voiturette race with three Calthorpe four-cylinder cars of 2 1-2 inches bore by 5 1-10 inches stroke. The engine has its cylinders in a single casting, Hele-Shaw clutch, sliding gear transmission, and final drive by cardan shaft. One of the interesting features is the use of Rudge Whitworth dismountable wheels, very largely employed on the other side of the Channel, but not previously demonstrated on the Continent. Spain sends a full team of four-cylinder cars with engine dimensions 2 1-2 by 5 1-2 bore and stroke. The drivers are Zuccarelli, for a long time Lancia's mechanic; Derny, an ex-Clement champion, who figured in Paris-Madrid and Paris-Vienna, and Pilliverdie, a newcomer to the game. Belgium has forwarded the engagement of three cars known as the Rif. The firm is recently established, and nothing has yet been made known regarding the car.

The race will be run on a very varied course having grades up to 13 per cent., and measuring 23 3-10 miles round. Ten rounds will be covered without controls.

BRITISH GRAND PRIX VOITURETTES

COVENTRY, ENGLAND, June 8—The three Calthorpe cars which are to be Great Britain's sole representatives in the Grand Prix des Voiturettes have been completed, and road tests have shown that these litttle vehicles are well able to make a good showing. The engine has four cylinders cast en bloc, the bore being 66 millimeters, with a stroke of 130 millimeters, and no less than 22 B.H.P. was recorded during the bench tests. The Hele-Shaw disc clutch, three-speed gearbox and aluminum rear axle casing follow the lines of the standard Calthrope voiturette. Rudge-Whitworth detachable wire wheels are fitted and these have proved of special value in enabling the effective gearing of the car to be modified to best advantage by fitting a smaller size. The body is of sheet aluminum and the total weight has been kept below 800 pounds. Until but a few days ago the race

seemed likely to be confined to the Lion-Pugeot and these Calthorpe cars, but it has just been announced that definite entries have been made for teams of Alcyon and Hispano-Suiza cars, both having four-cylinder engines. The contest between the English and Spanish entries will be followed with much interest, as the power plants are practically indentical.

AMATEUR RACE AT BROOKLANDS.

LONDON, June 1—The racing of Saturday and yesterday proved to be most interesting and the big fields and close finishes more than compensated for the absence of the high-speed record attempts that had been promised. The 15-horsepower Lancia commenced its successes with the first race, the Regent Cup for cars of under 20-horsepower, R. A. C. rating. For the whole of the nine and one-half miles the Lancia and its rival, the Vauxhall, kept side by side, and the latter was finally beaten by but a couple of yards. The speed average was 62 miles an hour. The Vauxhall regained top place in the next event, the Whitsun Handicap for members of the Brooklands Club. The Lancia was not running, and the Vauxhall had an easy win, an exciting tussle for second taking place between a 20-horsepower Mercedes and a 12-horsepower Sizaire, to the benefit of the latter. Several private matches were followed by a race for Jackson 6-horsepower cars, nine of which faced the starter. The winner averaged 39 miles an hour for the three miles, and the others all finished in a bunch. The invariable closeness of the finishes makes these standard car races very popular.

The May Senior Handicap brought out a curious medley of cars, ranging from a 16-horsepower Argyll to a Mercedes of 120 horsepower and an Itala of equal power—both Grand Prix cars. The first two laps provided ample excitement, albeit the Itala and the 90-horsepower Napier were both out of the race. When the leaders were entering the finishing straight the big Mercedes kept on round the outer course and so lost the race. The Lancia got in first at a speed of 68 miles an hour, while for second place the Iris barely defeated the Vauxhall. The first of the motorcycle races had 27 starters, and the winner, Cook, on a 7-horsepower N. L. G., averaged 68 miles an hour for the six miles. In the other event for these machines a 5-horsepower Indian gave a good race for first place, but was just beaten by a length. An obstacle race for cars, ending with a run up the test hill, completed the day's programme.

On Monday the Vauxhall led off with a win in the May Junior Handicap, the Lancia just 10 yards behind. Next came the Four-Inch race, when the only racing De Dion ever turned out from the Puteaux factory ran in first at 71 miles per hour, the Hutton, which won the Isle of Man race, being second, followed by a Humber and a Darracq. But the event of the day was the Whitsun Senior Handicap, for which 16 cars turned out. Excitement was aroused at the start and culminated at the finish when the Vauxhall won, not a length ahead of a "Knight" Daimler and a 40-horsepower Napier. The 120 Mercedes did well, averaging nearly 105 miles an hour for the 11 miles, but its handicap was too heavy to be made up.

A novelty was provided in the team race, open to pairs of cars with a total rating of under 60 horsepower. One car of each team ran a circuit, and as soon as the driver had handed a voucher to his team mate, the latter covered a circuit to the finishing post. The winners proved to be a 20-horsepower Nagant and a 40-horsepower Napier.

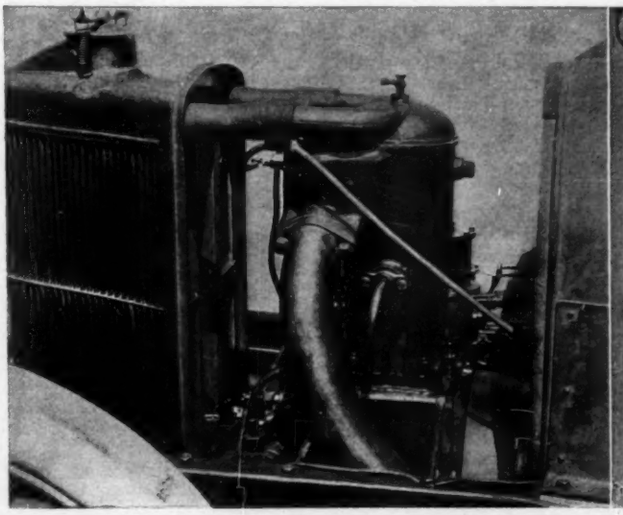
Finally came the Winners' Handicap, in which all the winners of both days competed, motorcycles and cars together. The smaller machines greatly added to the excitement and a 5-horsepower Indian was just beaten for first place by a 12-horsepower Sizaire car. The next meet will be held on Wednesday, June 30.

AUTOMATIC SPEED ALARMS COMPULSORY

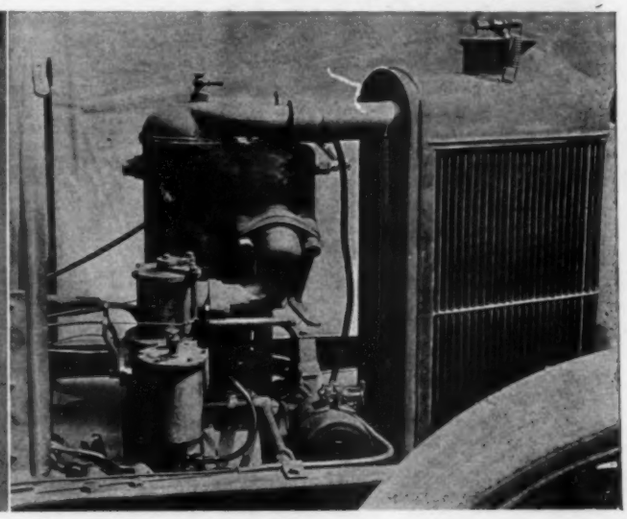
LONDON, June 8—The advent of the legions of motor buses and cabs—there are now over 3,000 of the latter vehicles in London—has greatly increased the dangers of traffic on account of the excessive speeds continually maintained by the drivers. To check this evil the Commissioner of the Metropolitan Police has taken the decisive step of requiring that all public-service motor vehicles be fitted with an automatic device which will give audible warning whenever the speed limit is exceeded. The exact form of the device is left to the judgment of the operating companies, but it must be sealed up out of control of the driver and the warning must be loud and continuous so long as the statutory speed is being exceeded. Unless the combined opposition of the companies causes the withdrawal of this regulation it will come into force on July 1 next.

ENGLAND'S MOTORCYCLE RELIABILITY RUN

LONDON, June 3—The reliability of the modern automobile is fast becoming proverbial, but occasionally the fact is brought home in a special manner. For the sixth annual 24 hours run from London to Edinburgh, which was held last Friday by the Motor Cycling Club, 112 motorcycles and 28 cars were entered. Of the 124 starters no fewer than 113 completed the journey of 400 miles within the 24 hours, while 106 finished in the minimum time of 22 1-2 hours. Thirty-two of the more venturesome, including the only lady competitor, Miss Muriel Hind, started on the return journey after a day's rest. All but one of these finished inside schedule time, so that the task of choosing the winner presents some difficulty to the club officials.



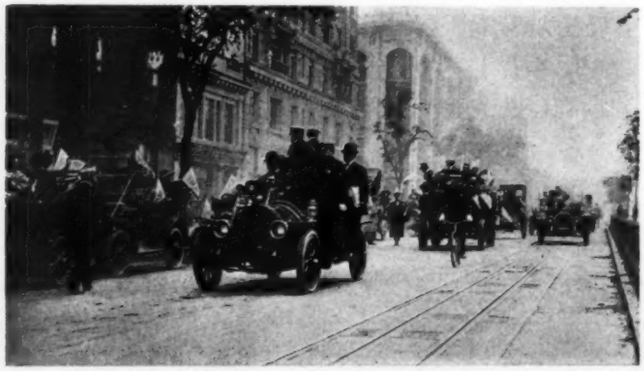
Crespelle Volturette Motor, Seen from Exhaust Side



Intake Side of Crespelle Motor, Showing Magneto

When New York's Orphans Arrived via Automobile at Dreamland, Coney Island—The Fairyland of Young America

NEW YORK'S orphans, nearly 2,400 of them, were on Friday treated to one of those outings which are year-marks in their lives, a real automobile parade, a long ride, and the freedom of the wonders of Dreamland, Coney Island. This fifth annual celebration of the orphans' day, now under the management of a corporation, was the most successful of the quintette of excursions given to the inmates of the charitable institutions of the city, and there were about 150 automobiles in which to entertain them. Rain had caused a postponement of the event from last Wednesday to Friday, but there was no diminution in the interest, either on the part of the small folk or of the donors of the cars, and long before 9 o'clock in the morning the autos were reporting to the headquarters of the committee for orders. The various institutions were then visited and the loads of happy children brought to the streets near Columbus Circle, where they were marshaled into divisions, and the parade began. After a run through the city streets, the cavalcade wound around the approach to, and then over the new Queensboro Bridge, and on to Coney Island.



Grand Marshal Owen Leading Procession Down Broadway

The Omnibus Division Was Extremely Popular with Boys

Dreamland was thrown open to the two-score hundred orphans and full advantage was taken of the hospitality. Those who were getting their first trip were fully informed by those who have been on hand in previous years, of the delights before them, and they who had taken the trouble to get up the affair were fuliy repaid by the evident pleasure of their guests. The big dining hall served 2,400 meals, and thereby once more experienced the capacity of the small boy and girl. Three items illustrate that: there were 4,000 oranges supplied, 20 cans of milk were not sufficient, and 3,700 large rolls—really small loaves of bread—were distributed. A substantial meal was served and great amusement was afforded the watchers at the antics of the youngsters. One table was not supplied with tumblers, but there was a decanter of water, and the boys decided that glasses were really not necessary; they stuffed their pockets whenever a chance permitted—that is when another youth was not watching; they vied with each other to see how many bricks of ice cream they could procure, and some little codgers were so anxious to satisfy a healthy appetite that they tried to eat with knifes and forks at the same time, thus using both hands.

After lunch the shows were visited, the animals, the shoot-the shoots, the scenic railway, the Philippinos, and all the other attractions held their attention, and 4 o'clock came all too soon for them. At that hour the autos were again lined up, the confusion settled, and the parade proceeded again to the big city. The police officials were especially efficient, keeping the roads and crossings clear during the passage of the autos, and in many cases facilitating their movement.

The corporation in charge of the orphans' day celebration, known as the Orphans' Day Committee, has as officers: President, Col. K. C. Pardee; vice-president and general manager, W. J. Morgan; treasurer, Richard Newton; secretary, Alex. Schwalbach; grand marshal, Percy Owen. The auxiliary committee, which raised a large amount of money and secured many private cars, is composed of: Mrs. Norwood T. Smith, chairman; Mrs. Thomas Nash, Miss Nash, Mrs. W. A. Alston, Miss A. McIntyre, Mrs. H. Badgley, Miss Howell, Miss Knox and Mrs. E. H. Barrows.

The following cars were represented: Packard, 4; Pierce-Arrow, 4; Stoddard-Dayton, 2; Stearns; Knox, 2; White, 7; De Dion, 2; Plymouth trucks, 3; Frayer-Miller truck; Kissel Kar, 3; Thomas; Manhattan Sight-Seeing cars, 3; Yellow Taxi-

cabs, Wycoff, Church & Partridge, 6; New York Taxicab opera buses, 6; Pullman, 2; Brush; Palmer & Singer; Studebaker, 2; Mercedes, 3; Royal Tourist; Autocar; Berliet; Pope-Hartford; Mora; Cadillac; Maxwell, 7; Rambler, 3; Winton; Alco, 3; Ranier, 3; Matheson; Hotchkiss; Oldsmobile, 6; Selden; Regal; Overland; Lozier; Reo, 2; Atlas; Renault, Stevens-Duryea; National, 2; Franklin, 4; Bianchi; Locomobile; Mitchell; Fifth Avenue Coach Company, 6 busses; Twentieth Century Touring Company, 6 buses; Taxi-Service Company, 5 taxicabs, 3 touring cars; there were other cars which reported at the last minute and were not listed.

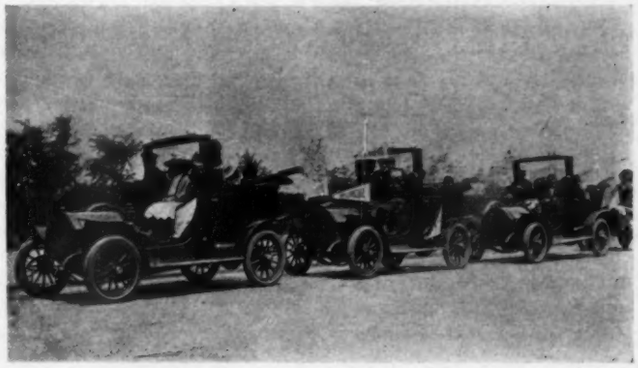
QUAKERS TAKE ORPHANS TO WILLOW GROVE

PHILADELPHIA, June 14—Threatening weather came within an ace of spoiling the annual orphans' day run of the Quaker City Motor Club, which had been postponed on account of rain from Wednesday last to the following Friday. At the starting hour, 9 o'clock, there was every indication of rain and another postponement; but Chairman E. H. Lewis decided to take a chance, and won out, as before noon old Sol was doing business in his best midsummer fashion. The lowering clouds, however, reduced the number of cars from the 100 promised to 92. These accommodated upward of 600 little ones, representing 21 institutions, who were given the time of their lives.

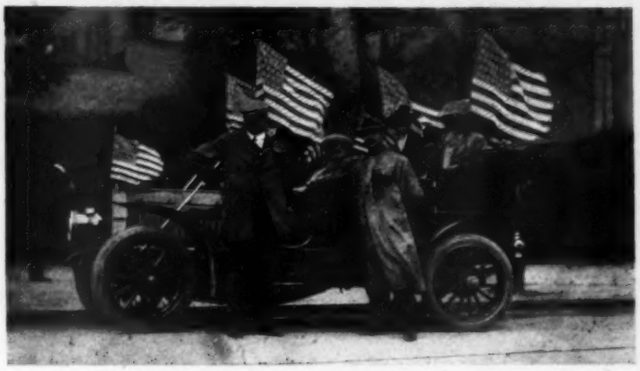
Upon arrival at Willow Grove, the children were met by a reception committee of club members and ladies connected with the Quaker City Ladies' Motor Club, who distributed tickets admitting the "kids" to the delights of the park—mountain trip, roller coaster, airship flight, trip to Venice, moving pictures, etc. At one o'clock the little guests were summoned to grove No. 1, where they made partially successful efforts to put away the lunch provided for an even thousand and supplemented by a thousand boxes of candy donated by Mrs. E. D. Kruse.

At three o'clock, Chairman Lewis and his committee began to round up the little ones, who were engaged in "repeating" on the attractions, with the overplus of tickets which had been distributed. Despite the lure of the Midway, the "kiddies" were corraled by four o'clock and all reached their respective institutions an hour later without a single mishap.

The committee had endeavored to induce the turnpike company owning the road to Willow Grove, to suspend toll collections on all cars carrying orphans, but upon their refusal the *Evening Times* stepped forward with an offer to foot the toll bill, which was gratefully accepted. All told, the day's outing was a happy one, long to be remembered by entertainers and guests.



Fleet of Yellow Taxicabs Laden with Youngsters



President Webb and Dr. Richardson, L. I. Club Committee

ORPHANS INTEREST WEALTHY BROOKLYNITES

When the Long Island Automobile Club officials in charge of the Orphans' Day celebration interested the wealthy folks of Brooklyn, they did a wise store of business. The result was that instead of a lack of cars and money to further the plans, President Frank G. Webb and Chairman of Outings Dr. William P. Richardson, were put to more trouble in getting the "kids" to forsake Coney Island with its new and wonderful delights, when it came time to go home. The outing was voted a great success by all of the children, so the committee should be well satisfied with the results of their labors. The picture above shows the two officials before the car in which they led the parade.

Crossing the New Queensboro Bridge, That Spans the East River to Long Island City, En Route to Coney Island

BLIND CHILDREN HAVE OUTING IN BOSTON

BOSTON, June 12—The annual outing for blind children given by the Boston Automobile Dealers' Association took place Wednesday and 125 little ones deprived of their sight and pupils at the Perkins Institution for the Blind, in South Boston, and of the Kindergarten for the Blind, in Jamaica Plain, were taken to the Lakeside Home on the shore of Lake Massapoag in Sharon in cars supplied by the local dealers. The Lakeside Home is a charitable institution for children, of which Rev. M. R. Deming is superintendent, and there the children were entertained during the day.

The cars assembled in Copley Square between 9:30 and 9 o'clock, and after picking up the blind children and their teachers and leaders, were driven the ten miles or more through the parkways and boulevards and over excellent country roads to Sharon. After a day spent in out-of-door amusements, the children were returned to their abiding places. Those who supplied cars were: W. H. Jenkins Company, Mitchell; Buick Motor Company, Dodge Motor Vehicle Company, Pope-Hartford Franklin Automobile Company, Winton Motor Carriage Company, J. M. Linscott Company, National; J. W. Bowman Company, Stevens-Duryea; Premier depot, L. B. Butler, Whitten-Gilmore Company, Thomas; Ford Motor Company, F. E. Wing, Marmon; Park Square Auto Station, Stoddard-Dayton; J. H. MacAlman, Stearns; Thomas B. Jeffery & Company, Rambler; Henry H. Pierce, Alvan T. Fuller, Packard truck; the White Company, J. W. Maguire, Pierce; V. A. Charles, Inter-State; K. M. Blake, Locomobile; George H. Lowe, Pennsylvania; Leonard A. Day, W. J. Cooper, William F. Mayo, Frank C. Snyder and Kenneth A. Skinner.

KANSAS CITY'S ORPHANS' DAY PARADE

KANSAS CITY, Mo., June 14—The Automobile Club of Kansas City held its third annual Orphans' Day on June 9. At three o'clock in the afternoon 60 cars laden with 300 orphan children started from Armour boulevard and Broadway for a 30-mile ride out to Swope Park. Following a new departure this year the committee decided to form the parade entirely of cars owned by club members, and was very successful in obtaining the use of enough cars to comfortably seat every one. At the start each one was given a souvenir flag and all of the cars carried pennants. Waving their flags and constantly shouting at every one passing by, the children certainly made the most of their holiday.

This custom of giving the orphan children an outing has become a fixed annual affair here, and will undoubtedly remain so because of its popularity. In addition to its charitable nature, which is in itself sufficient reason, the club derives a certain benefit from it in good will of the community and increase in membership applications.

RAIN INTERFERED AT BALTIMORE

BALTIMORE, June 14—The continual rain of the past week made it necessary for the members of the Automobile Club of Maryland to postpone the orphans' day outing from last Wednesday. In consequence of this enforced action on the part of the club members more than 800 little ones who had looked forward to a pleasant trip through the prettiest sections of the city and suburbs were disappointed. The owners of cars in this city entered into the spirit of the occasion so that nearly two hundred cars were offered for the entertainment of the children at Electric Park. These are still at the disposal of the club when a clear day comes along for the outing.

COLUMBUS ORPHANS WILL BE HAPPY

COLUMBUS, O., June 14—Arrangements have not been completed for the annual orphan's day to be given by the Columbus Ohio Automobile Club, June 19. It will require at least 200 cars to carry the children. Requests have also been made for "goodies" such as candies, peanuts and ice cream.

CONDITIONS IN FRENCH AUTO INDUSTRY

Overproduction, much price cutting, high taxation, liability of arrest, and reduced taxicab charges, are greatly harming the automobile business in France, according to A. E. Schwartz of Paris, foreign representative of the American Motor Car Manufacturers' Association, who is now in this country on a business trip. Mr. Schwartz was impressed with the immensity of the American industry when he arrived a few days ago, and in comparing it with the conditions in France, said:

"There is an enormous difference, for every one here seems busy, whereas in Paris the dealers have to sell sporting goods, bicycles, and other things to pay expenses. There has been a large overproduction of automobiles, and if a European manufacturer were told of the status of the American industry he would be incredulous, and call it a 'bluff.' In France the private purchaser can get the same discount from a maker as the dealer, and therefore the buyers do not deal with agents but go direct to the factory. Another difficulty is with the taxation which requires the payment of five francs (one dollar) for each seat, and five francs for each horsepower, so that if one buys a 30-horsepower car with four seats, the tax is 170 francs; and this must be paid to the State and then to the city, making the charge 340 francs ($68).

"Coupled with this is the practice of arresting automobilists on the least provocation, such as for smoking when the exhaust is no thicker than that emitted by a pipe or cigar smoker. Then the police try their best to fine for something else at the same time, the result generally being a charge of about 50 francs. These things have hurt the industry. Another matter which has contributed is the reduction of taxicab rates, so that now a cab can be rented for 50 cents an hour, for four people, and many have sold their machines. which they used only in the city, and thereby rid themselves of the bother caused by the police, garages, chauffeurs, and the expense, preferring to use the taxicabs.

"A very interesting fact is the great number of people that have taken up the aeroplane and aerial navigation in general. There is many a man who is and was famously known at the steering wheel of an automobile, who has his little idea up his sleeve for a new device for aeroplanes, and I know of one big accessory store that claims to do more business in supplies for aeroplanes than for automobiles, in the last few years."

N. H. VAN SICKLEN, SR., JOINS BLUE BOOK

The rapidly increasing demand for touring information in all sections of the country has necessitated a larger organization to carry on the work of "The Official Automobile Blue Book," and a new corporation, with largely increased facilities, has been formed under the incorporated name of The Automobile Blue Book Publishing Company.

N. H. Van Sicklen, Sr., former owner of *Motor Age*, and recently Chicago branch manager for the Knox Automobile Company, and one of the most widely known men in the automobile industry, is president of the new corporation, and he, with the former owners of the "Blue Book," will constitute the board of directors. Mr. Van Sicklen will immediately inaugurate a strong campaign for the extension of the "Blue Book's" scope and influence, so as to practically cover the entire United States, Canada, and Mexico. Headquarters will be in New York and Chicago.

"The Official Automobile Blue Book" is now recognized as the standard route book for this country, and under Mr. Van Sicklen's management the new corporation will extend its work to cover every requirement of the automobile tourist.

EX-CHAIRMAN J. D. THOMPSON GOES ABROAD

Jefferson DeMont Thompson, ex-chairman of the A. A. A. racing board and Vanderbilt Cup commission, recently sailed for the other side for a summer vacation in Europe, where he will tour in France, Germany, and Austria.

MODERN FIRE DEPARTMENTS NOW USE AUTOMOBILES

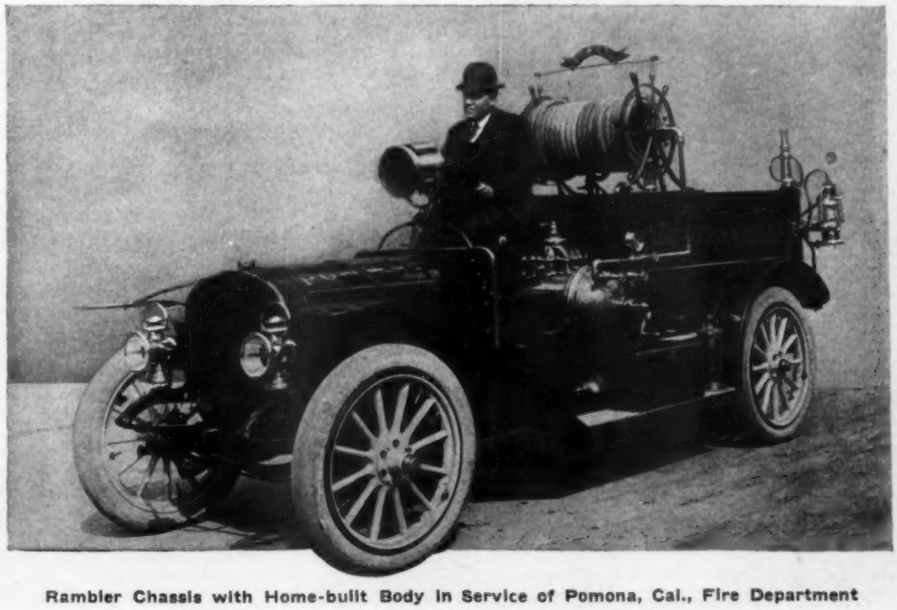
EVEN if the Senate of this great country does not approve of the automobile, it is a fact that its use is not only increasing daily with leaps and bounds, but is fast extending into other fields of endeavor. The strange part of this is that it always makes good, no matter what the use may be.

Auto-Car Chemical Truck for Fire Department, Ocean Grove, N. J.

Thus most of the progressive fire companies have tried the self-propelled car, the trial resulting in its adoption. The latest to fall into line is the H. E. Stokes Fire Company No. 3, of Ocean Grove, N. J. This company has just purchased and put into use a truck of the high-speed type, as manufactured by the Auto-Car Manufacturing Company, of Buffalo, N. Y. The Auto-Car company has been in the commercial car business for many years and its product shows this in the little details. This particular car is powered with a 40-50-horsepower engine, so geared as to allow a speed of 50 miles per hour on the high gear. It is equipped with two 35-gallon tanks, 150 feet of hose and has ample room for 12 to 16 men. The truck was adopted by the hose company after a very severe test, which took the form of a trial run over country roads with a heavy load. The distance was 45 miles, which was covered with a load of 14 firemen, in the excellent time of 53 minutes, or at the rate of 51 miles an hour, thus proving the maker's claim of a speed of 50 miles in the best possible manner. The main object in making the run was to show the great advantage of motor chemical trucks in case help is called for by near-by towns. This truck is one of the first products of the Auto-Car company's new factory, located on Elmwood avenue, Buffalo, which is a very modern commercial car factory, with improved facilities. The annual output of the company is now about one thousand cars per year, chief among which are numerous machines of the type illustrated and described, the demand for these fire wagons having increased to a wonderful extent in the past few years.

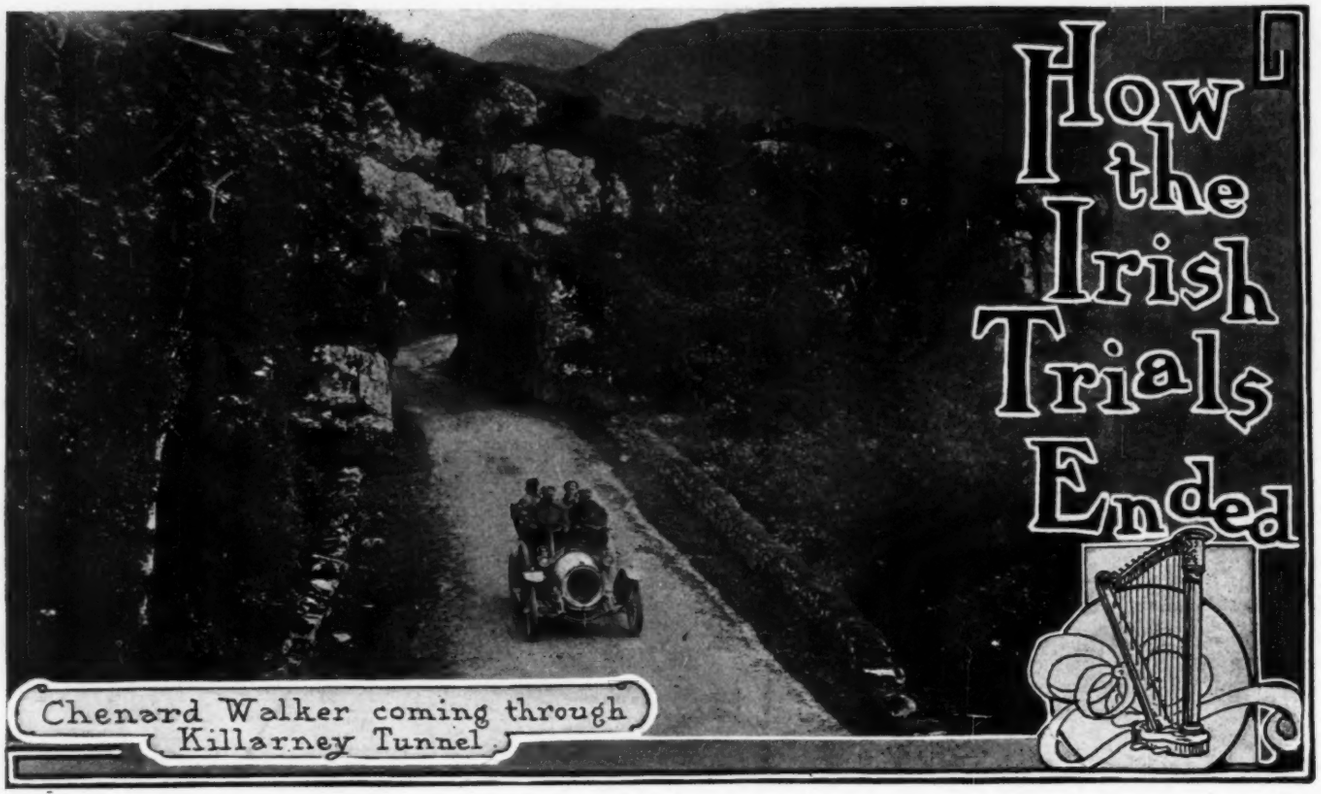
RAMBLER CHASSIS FOR WESTERN FIRE DEPARTMENTS

NOT to be outdone by any of their Eastern rivals, the city authorities of Pomona, Cal., have recently put into commission a chemical fire engine, and so great has been its success in the short time it has seen practical use, that the city of San Diego, not very far from Pomona, is about to construct and put into service a similar outfit. The Pomona car is built upon a Model 45 Rambler chassis, of 45 horsepower. The wheelbase is that of the standard touring car of this model, namely, 124 inches, as the Thomas B. Jeffery Company has never attempted to build commercial cars, although the chassis are finding much favor for this strenuous work. The chemical apparatus, consisting of three large tanks, numerous small tanks for hand use, hose and hose-carrying mechanism were fitted to the chassis in California, upon its arrival there. One of the tanks is located alongside of the driver, in the unoccupied front space, while the others are placed in the back. The hose reel, with a capacity of 150 feet of hose, is placed across the car right back of the driver's seat. The running boards and the remaining space at the back allow standing room for about ten or a dozen firemen. On the trial trip of the completed car, a fire was reached within two minutes of the sounding of the alarm, thus showing plainly the large improvement in the speed of the service over the previous horse-drawn wagons.



Rambler Chassis with Home-built Body in Service of Pomona, Cal., Fire Department

How the Irish Trials Ended



Chenard Walker coming through Killarney Tunnel

DUBLIN, June 2—When the contesting cars in the Irish Reliability Trials reached Dublin, at the finish of the week's work, for it was real work, there were but twenty of the fifty-two starters left with perfect scores. Among these, distributed over eight classes, with but three exceptions the winning cars in the hill climbing contests were noticeably absent. Of the three classes one of them had but a single car, so there was no competition. There remained, then, but two cars, which won all three of the hill climbing contests and scored perfect for the six days of running over the miserable Irish roads, thus bringing out the lesson of the tour, namely, that hill climbers are seldom reliability winners, and vice versa, reliability winners do not usually take the prize for hill climbing.

These two exceptions were the 12-horsepower Riley in class C, for cars from £150 to £250 ($750-$1,250), and the 16-horsepower Humber in class D for cars costing under £350 ($1,750). Notable among this list of absentees from the perfect score survivors were the 25 Talbot and the 24 Vauxhall in class F. The former had clutch trouble from the start, but made the fastest time up Greenan's Hill and Farmer's Bridge Hill, while the latter outdid the other fifty cars on Magilligan Strand. Of the remaining seventeen perfect score cars but two did anything worthy of mention in the speed tests and hill climbing.

Beginning on the first day and continuing throughout the trial, there were cars in trouble at all times. The miserable Irish roads tested the frames and running gear to the limit, and those contestants who had not made adequate provision for the worst test that the car would ever experience, were soon to be found strung along the roadside, working on some sprung or broken parts. The springs, propeller shaft, fuel systems, and lubrication troubles caused the greatest number of victims.

Thus, the 15-horsepower Mass had spring trouble continuously, proving that the springing of this car was not adapted to this kind of country. On the first day a broken spring held the car and crew for 19 minutes, which penalty was increased by 55 minutes more on Saturday, when another spring failed. Later the crew of this car received and placed on it another full set of springs.

This and the large amount of shaft trouble showed more than words the roads. On the third day out, just beyond Westport, the 15-18 Bedford broke its propeller shaft and withdrew from the contest. Next day, within four miles of each other, the two Chenard-Walckers broke their propeller shafts crossing culverts, with which this day's trip was replete. This was very unfortunate, for at the time of the accident both cars were running very regularly and both had perfect scores.

Taking the tour as it went, from day to day, there were an average of five cars per day put out of the non-stop division, up to the last day, when the only cars to have trouble were the 12-horsepower Star and the 14-16 Motobloc. The former had a leaking gasoline cock, which allowed the fuel to waste away, necessitating a renewal from an unsealed can, this day's run being made a fuel consumption test with measured quantities of gasoline. The Motobloc had the same kind of a loss, breaking its gasoline pipe, which accident cost 19 points penalty.

Arriving at Dublin each car's tank was emptied and the amount of spirit remaining carefully measured, this amount being entered upon the official records. As this gasoline consumption has not yet been announced, and will not be for some time, it is impossible to state finally which car or cars have won the contest, if there be any winner, or which stands highest in the classes.

The following list, however, subject to official verification, gives the list of perfect scores made. It now appears as if the Dunlop Cup for the best performance of a team of cars will have been gained by the Humber cars, with the American-made Cadillacs or the Stars in second place.

Class A (price not exceeding £150 or $750), 15-horsepower Bedford.

Class B (price £150 to £200 or $750 to $1,000), 8-horsepower Riley and 10-horsepower Riley.

Class C (price £150 to £250 or $750 to $1,250), 10-horsepower Humber, 12-horsepower Riley and 12-horsepower Star.

Class C 1 (£200 to £260, two-seated bodies), 12-horsepower Marlborough.

Class D (under £350), 15-horsepower Marlborough, 16-horsepower Humber, 30-horsepower Cadillac, 30-horsepower Cadillac, 15-horsepower Rover, 15-horsepower Straker-Squire and 16-horsepower Humber.

Class E (£350 to £450), 15-horsepower Deasy, 20-horsepower Vauxhall and 20-horsepower Vauxhall.

Class F (£450 to £550), 18-horsepower British Gladiator, 20-horsepower Sunbeam.

Class G (£550 to £700), 40-horsepower Gladiator.

In many senses the Trial was the most severe held so far, and as will be seen from what has been said, although the casualties have not been done in detail, it has been somewhat remarkable for the number of entries (and starters) among the higher grade cars. Not all of these came through the trial well, as many had very noticeable hard luck. Then, too, the lesser known cars came out in force, and many of them did surprisingly well, as witness the smaller Marlboroughs, the little Rileys, and the Little Britons. It is to be regretted that the final and official results of the fuel consumption tests of the last day are not known, so that the contest as a whole would be settled and consequent deductions drawn from the results.

One of the biggest surprises of the week, which has occasioned comment ever since as well, was the excellent performance of the 40-50 Gladiator, the highest powered and heaviest car in the list. The weight was well over two tons and the car stood right up in the van every day despite this. The double distinction of weight and power, coupled with the fact that it was alone in the highest priced class drew attention to the car at the outset, which was sustained later by its daily performances.

DIRIGIBLE AIRSHIPS OF FRANCE

PARIS, June 10—Orders have been given for the French dirigible balloon *Lebaudy* to be put to a series of gruelling tests. The airship, which was built in 1904, is to be put on active service and tested to its utmost limit, moving about with the troops and camping in the open air each night, its crew camping out with it.

M. Gustave Clement, the owner of the Bayard-Clement airship, has had a dirigible balloon shed built on a corner of the Issy-les-Moulineaux aeroplane ground in the neighborhood of Paris. This will give him a spot in which to house his airship after a journey from his country residence to Paris.

RACING AUTOISTS TAKE TO AERONAUTICS

PARIS, June 10—The automobile race movement, as it was known in Europe three or four years ago, having now become a thing of the past, crack race drivers are turning their attention to the aeroplane and seeking to qualify for positions as aerial racers. Although Henry Farman, the chief of the French aeroplane pilots, has not taken part in any important automobile race, he figured nevertheless somewhat prominently in the early automobile movement. His brother, Maurice, drove in big automobile races as late as last year, and is now experimenting with aeroplanes. Henry Fournier, a veteran of the automobile movement, and who has taken part in more international pure speed events than probably any other man, is already devoting his attention to the selling of aeroplanes, and has contracted for a large portion of the Voisin output this year. Further, he has had a machine built for his own use and, driven by a four-cylinder Itala motor, intends soon to make his first flights.

Baron de Caters, a distinguished figure during the race period from 1899 to 1905, when gentlemen race drivers were more prominent than professional chauffeurs, is a qualified aeroplane pilot, having made a number of very successful flights on a Voisin machine. Rougier, for many years a Dietrich race driver, and now interested in the sale of this car, has purchased an aeroplane and intends to take part in all open contests with it. His teammate, Arthur Duray, who, though a Belgian, first saw light in New York City, is also interested in the construction of an aeroplane, and may be expected to be heard of in the air very shortly. Victor Demogeot, the genial busy Frenchman, who has some fine records to his credit on Ormond-Daytona beach, is about to graduate from the automobile to the aeroplane, and will doubtless very shortly be announced as the pilot and demonstrator for a French company having a license to build Wright flyers. There are a score of others, who have been more or less prominent in the automobile racing movement, who are merely waiting the opportunity to take the wheel of an aerial racer.

Captain Hugh L. Willoughby, well-known in yachting circles, states that he is building an aeroplane in Florida.

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H. M. SWETLAND, President
A. B. SWETLAND, Business Manager

231-241 West 39th Street, New York City

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WHY NOT AMERICAN WIRE WHEELS?

The unusual and continued success of the wire wheel on the other side, particularly in England, where they are much in vogue, draws attention to the fact that practically none is used in this country, the only maker having "stuck" to them in the past having now changed so as to offer wood as an option.

What is the reason for this apparent apathy on the part of the American public, always so attentive to foreign successes, toward the wire wheels? It is urged in their favor that they possess extreme light weight and much strength; in fact, weight for weight, it is possible to carry a much greater weight upon wheels of this type. Now the modern tendency is substantially toward the smaller car, with less carrying capacity, and, of course, light weight. Fuel consumption is becoming of much more importance each season, and increased useless weight means higher fuel consumption, without a doubt. Why, then, do not many of us arrive ultimately at the two-cylinder car with vertical motor of about 12-horsepower, selling below $1,000, and fitted with wire wheels?

Surely, if a car weighing perhaps 5,000 pounds and equipped with a motor of 75-horsepower, like the Napier, can go through season after season, on wire spoked wheels, without serious trouble, the efficiency and durability of this form cannot be questioned.

It is urged against the wire wheels that they have no strength to resist side strains, yet the little Cameron racer at the Savannah races last Fall stood practically upon two wheels with the other two in the air, while going along at the rate of sixty miles per hour, without any damage whatever, which does not sound very weak.

In England, where they attain their greatest popularity, a new detachable wire wheel has just been brought out, which seems to make that form even more popular than at present, if that is possible. Yet England is a great country for little and economical cars of 10 to 15-horsepower. If this form of wheel wears out as quickly as claimed, why is it that so many of the economically inclined Englishmen use that form?

Wood wheels have been the subject of study for perhaps one hundred years, and by a gradual process of elimination the faults have been reduced to a minimum. The so-called bicycle wheels, on the other hand, have been in existence not over one-fourth of that time. Who shall attempt to say, then, that with equal attention to materials, design, and construction, the wire form may not retrieve all of the faults laid at its door and become as efficient and as popular as its competitor, the older form?

One large item even now worthy of consideration is the great and growing trouble of obtaining suitable materials for the spokes and felloes of the usual artillery wheel. With wire, on the other hand, there probably never will be a scarcity of proper materials.

* * *

IN ORDER TO OBTAIN WINNERS

Never before have motor-driven vehicles been subjected to such vigorous and searching examinations as are now taking place throughout the entire country. Contests are scheduled in all sections, and rules have been originated for the sole purpose of reducing the field to a single winner in a class. Frequently even this fails to bring about an almost solitary survivor, and ties are not unknown in events calling for microscopic technical requirements. Mayhaps the officials are too insistent.

Coincident with the difficulty encountered in securing an elimination process that shall insure winners is the furtherance of knowledge on the part of the general public, which is rapidly learning to discriminate between demerit marks indicating faulty construction and those so minor in character as not to be entitled to any consideration in passing upon the reliability of an automobile. It is becoming generally recognized that the most minute attention in the compilation of rules is a necessity in encouraging competition, for the reason that tied scores bring about much dissatisfaction, and are naturally embarrassing to the promoting bodies in disposing of the prizes.

Hence, those concerns which in the past may have refrained from competition need not worry themselves in the least through fear of demerit marks which might interfere with sales. The average buyer now understands, and whether a car wins or loses the mere participation in the contest itself is an excellent recommendation as an indication of perfect willingness to try reliability with rival makes.

Judging from the generous entry lists, the agents are of the belief that contests aid in making a car known, besides assisting in accentuating and arousing widespread interest. Events indicate progress and prosperity.

HOW THEY WILL START IN CHICAGO RACES

CHICAGO, June 14—What was really the first official action following all the preliminary work leading up to the big road races took place on Friday last in front of the press stand of the Crown Point course. It had been proposed that the drawing should be by entrants rather than individuals, which meant that a concern with three cars should draw three numbers at one time, and the three cars be spread automatically down the list, and thus separated.

But Robertson and Strang objected. They pointed out that Savannah was the only one that had done it that way; that the Vanderbilt left it to individual drawing and that they preferred the Vanderbilt method. Willing to oblige, General Executive Trego left it to a vote and the vote favored Robertson and Strang. It was decided that the order of drawing should be by order of entering, which gave the Moon first draw in the Indiana trophy and the Buick first in the Cobe cup. Herewith is the result of the drawing:

COBE CUP

No.	Car	Driver
1	Stoddard-Dayton	B. Miller.
2	Knox	W. Bourque.
3	Apperson	J. Seymour.
4	Buick	L. Strang.
5	Stoddard-Dayton	C. Englebeck.
6	Locomobile	J. Florida.
7	Knox	A. Denison.
8	Apperson	H. Lytle.
9	Locomobile	G. Robertson.
10	Buick	L. Chevrolet.
11	Fiat	E. A. Hearne.
12	Buick	R. Burman.

INDIANA TROPHY

1	Corbin	A. Maisonville.
2	Buick	R. Burman.
3	Marion	H. Stutz.
4	Ford	G. Dunnell.
5	Chalmers-Detroit	W. Knipper.
6	Marion	A. Monson.
7	Locomobile	J. Florida.
8	Buick	G. DeWitt.
9	Fal-car	W. H. Pearce.
10	Locomobile	G. Robertson.
11	Moon	Phil Wells.
12	Renault	A. Greiner.
14	Buick	L. Strang.
15	Fal-car	J. Ruehl.
16	Stoddard-Dayton	F. Wiseman.
17	Chalmers-Detroit	Al Poole.
18	Stoddard-Dayton	C. Wright.
19	Chalmers-Detroit	J. Matson.

General Executive Trego moved his headquarters to Crown Point on the same day as the drawing, the Sheriff having given up his office in the county building to the road race official. Trego took possession and at once started to tackle the mass of details that confronted him. He heard the report of the surveyor who chained the course for the purpose of knowing exactly the distance around the circuit. It had been odometered at 23.6, and that distance had been used in talking of the race. But the steel tape told another story and reduced the distance materially. It showed the course to be exactly 23.27424 around, which, therefore, will make the little race 232.74 miles in length instead of 236, and reduces the Cobe cup from 402 to 395.66.

Plans for the ambulance service have been completed, two ambulances having been proffered for the work. One of them is a White steamer ambulance belonging to F. F. Roberts, a north side undertaker, who has agreed to equip it with a doctor and nurse. The other car also is a White steamer and is a combination touring car and ambulance, the idea of James E. Plew, of the White Company's Chicago branch. Ordinarily a touring car, the backs of the front seat fold backward, which makes either one or two comfortable cots in the tonneau.

A camp for the officials has been established, a unique idea that has been brought about by the skimpy hotel acommodations. The camp is located on the big 80-acre lot where the soldiers will pitch their encampment. Oliver G. Temme, bearing the high-sounding title of commissary general, is in charge of the officials' camp, and he has prepared accommodations for eighty, which will include forty of the flagmen who are working under the direction of Frank B. Wood. Tents galore have been erected, cooks and other servants hired and for the rest of the week the officials will live in comparative luxury while others are scouting around for sleeping and eating accommodations.

Eighty flagmen are being used for guarding the roads during the practice, which began Monday afternoon, forty of whom are students from the Chicago School of Motoring. It was found necessary to do the practicing in the afternoon because of the fact that the farmers of Lake County do a big milk business and they objected to closing the roads in the early morning, as is done in the Vanderbilt. They also objected to permitting the practicing to begin on Thursday as originally scheduled, so the general executive issued the edict that not until Monday would the flagging service be instituted. This, however, did not prevent the drivers from becoming busy in the early morning hours, although they were somewhat handicapped by having to go slowly through both Crown Point and Lowell. Also the road was not completed all the way around, so this practice was generally unsatisfactory, although it did permit the drivers to study the road and be in a position to take advantage of this knowledge when they were turned loose and permitted to burn it. Arthur Greiner, the one amateur entrant, was denied this by a turn of hard luck. Just as he was preparing to move to his camp he was stricken with a touch of malaria, which forced him to go to the hospital instead of Crown Point, and for several days he chafed and worried while his rivals were stealing a march on him. Greiner was further handicapped by his unfamiliarity with the Renault which he is to drive. He got it only for this race and up to the time he went to the hospital he had not had a chance to drive it.

Officials chosen for the race show that the Chicagoans have endeavored to get the best talent possible. They selected Asa Paine, of Minneapolis, for referee, and Fred J. Wagner, of New York, for starter. Then they picked a home man for clerk of the course, Charles P. Root; Boston was called upon to furnish the chief timer, sending Harry Knights, whose reputation at this sort of work is national. The judges include John Farson, John C. Eastman and Fred D. Countiss, of Chicago; H. O. Smith, of Indianapolis; Judge W. C. McMahon, of Crown Point, Ind., and Judge V. S. Reiter, of Hammond, Ind. Frank B. Wood, of Elgin, Ill., is chief flagman, and "Bick" Edwards, of Chicago, has been given charge of the electric timing apparatus. The commissary general is Oliver G. Temme, of Chicago, who will have a competent staff of assistants.

WHITE IN GLIDDEN TO USE KEROSENE

The 40-horsepower White steamer which has been entered for the Glidden tour will make the 2,500-mile trip using kerosene as fuel instead of gasoline. This will be the first extensive public performance, either in this country or abroad, by a car using any fuel other than gasoline, and for that reason the progress of the car from day to day will be watched with unusual interest. The fact that this will be the only car entered by the White Company makes it evident that the company has the most complete confidence in the new kerosene burner and do not anticipate that any penalizations will result through the use of this new fuel. It might even happen that the supplies of gasoline shipped ahead for the use of the contestants on the tour will prove inadequate, in which case the White would have a decided advantage, as it could procure a supply of kerosene at any crossroads store or at almost any farm house. It is also evident that the cost of the fuel for the White throughout the trip will be considerably less than for any other machine. The car will be driven by H. N. Searles, who for two years was enrolled in the United States Secret Service and had charge of President Roosevelt's White cars at Oyster Bay.

CLEVELAND GETS A. A. A. GOOD ROADS CONVENTION

TWENTY-FIVE directors of the A. A. A. were in New York City last week attending the quarterly meeting of the association, held Thursday at the national headquarters, 437 Fifth avenue.

President Lewis R. Speare, of Boston, and several other directors remained until Friday morning to perfect some details in connection with the work of the various national boards. In speaking of the work accomplished President Speare laid especial emphasis upon the new racing and contest rules, presented by Chairman Hower of the contest board, which were unanimously approved, and the action taken to discourage the formation of purely promoters' automobile clubs, organized chiefly to hold race meets. It was resolved that hereafter the half rate price for sanctions to conduct meets allowed to clubs in the A. A. A. should not be granted to clubs which have not held A. A. A. membership for at least ninety days. The sentiment of the association's executive officers was very forcibly expressed to forestall race meets by "short-term" clubs in the future.

The new racing and contest rules drafted by the contest board and its advisory committee, composed of representatives of the manufacturers, will be printed and issued at once from Chairman Hower's office at Buffalo. Mr. Hower stated that thirty-two entries had been received for the Glidden Tour, and he told of the widespread interest that has been aroused in this year's event.

The Arkansas State Automobile Association was elected to membership, giving the national association its thirtieth affiliated State body. This association comprises clubs in Little Rock, Hot Springs and Fort Smith.

J. O. Heinze of the Lowell (Mass.) Automobile Club, T. Ed. Bryan of the Tampa (Fla.) Automobile Club, and A. J. Yeager of the Juniata Valley Motor Club, Lewistown, Pa., were elected directors.

A report was filed by Chairman Terry of the Legislative board regarding the work accomplished in many States, and interesting reports were also made by Chairman Diehl of the good roads board and Chairman Evans of the touring information board. Chairman Evans indicated that the activities of the touring information board had outgrown its present headquarters, and at his suggestion the president was authorized to appoint a committee to formulate plans for conducting the work of the board on a broader scale, and arranging for larger headquarters.

Chairman Terry of the committee on resolutions presented the resolutions indicative of the association's appreciation of the long continued interest and splendid service rendered by its former president, William H. Hotchkiss. The appointment by Chairman Hower, of T. A. Wright of Wilkes-Barre, Pa., and S. B. Stevens of Rome, N. Y., as members of the contest board was approved.

The members present at the meeting were:

President Lewis R. Speare, Boston; Frank B. Hower, Buffalo, chairman contest board; Powell Evans, Philadelphia, chairman touring information board; George C. Diehl, Buffalo, chairman good roads board; Charles Thaddeus Terry, New York, chairman Legislative board; E. P. Chalfant, representing A. L. A. M.; Treasurer H. A. Bomell of New Jersey; Frank G. Webb, president Long Island Automobile Club; Robert P. Hooper, president Pennsylvania Motor Federation; O. A. Quayle, Albany; W. L. Brown, Syracuse; John O. Heinze, Lowell, Mass.; Dr. J. N. Faulkner, Paterson, N. J.; L. J. Powers, Jr., Springfield, Mass.; H. L. Hammersly, Wildwood, N. J.; S. Boyer Davis, secretary Automobile Club of Philadelphia; George A. Post, Paterson, N. J.; George H. Waters, Richmond County Automobile Club; Harlan W. Whipple, of New York; J. I. Wakelee, Englewood, N. J.; B. W. Nostrand, Peekskill, N. Y.; A. G. Batchelder, New York; W. O. Griffith, secretary touring information board; C. H. Gillette of Hartford, and Secretary Frederick H. Elliott.

A. A. A. Good Roads Convention in Cleveland

A meeting of the national convention committee followed the directors' meeting, and it was unanimously decided to hold the "Second Annual Goods Roads Convention" in the city of Cleveland during the last week of September. It was announced that George C. Diehl of Buffalo, chairman of this committee, and Secretary F. H. Elliott will shortly visit Cleveland, and while there confer with the officers of the Ohio State Automobile Association and the Cleveland Automobile Club relative to the naming of committees to take charge of the local work and make other arrangements for the holding of the convention.

Next Meeting of Directors in Detroit

It was decided to hold the next meeting of the A. A. A. executive committee in Detroit, Saturday, July 10, and upon the motion of President Speare the directors will be invited to attend the meeting. The association's officers will be guests at the banquet to be given on that evening by the automobile manufacturers of Detroit and will be guests at the Automobile Club of Detroit on Sunday and witness the start of the Glidden Tour on the 12th.

WISCONSIN GETS BETTER LAW

MILWAUKEE, June 14—The Wisconsin legislature has passed the Page bill, but amendments adopted at the last minute ruined the intent of the bill as desired by the combined clubs and associations of Wisconsin in eliminating the speed limit and making reckless driving under the circumstances a misdemeanor. The assembly amendment places a speed limit of 18 miles in cities and 25 miles in the country districts into the bill. The senate passed the bill as drawn, but in the assembly the rural members expressed the opinion that there was a "joker" somewhere in the elimination of the speed limit. The new speed limits are an improvement over the old provisions, which were: In cities, 12 miles, and country districts, 18 miles. The clubs are taking the compromise with good grace, as the opposition developing in the assembly was not unexpected. The Page bill also provides that no person under 16 years of age may operate a machine unless accompanied by a parent or guardian, and makes parties who fail to stop and offer assistance to any person injured guilty of a misdemeanor. It also raises the license of registration fee from $1 to $2 and abolishes transfers.

A HUSTLING SOUTH CAROLINA CITY

SPARTANBURG, S. C., June 14—In view of the proposed New York *Herald*-Atlanta *Journal* tour this fall from New York to Atlanta, a joint committee from the Greenville and Spartanburg Automobile Clubs, consisting of Thomas F. Parker, chairman, and W. J. Thackston, of Greenville; V. M. Montgomery and Fred. L. Bryant, secretary, of Spartanburg, and Frank Burgess, of Greers, was appointed to aid in the selection of the route through this section. The appointment of this committee was the result of a joint meeting, held recently in Greenville, which was attended by members of the Greenville Automobile Club, the Greenville Board of Trade, the Greenville county commissioners, committees from the Spartanburg Automobile Club, the Spartanburg Chamber of Commerce, the Spartanburg county commissioners, and a delegation of citizens from Greers. At this meeting there was much enthusiasm for the proposed tour, the county commissioners of both counties expressing their determination to put the roads in excellent condition before the time scheduled for the tour. While the routes are not definitely settled, each county will endeavor to have its best road used.

FAIRMOUNT PARK'S STOCK CAR RACE IN OCTOBER

PHILADELPHIA, June 14—At a meeting of the contest committee of the Quaker City Motor Club last week, it was voted, on the suggestion of Secretary Harbach, to devote the net proceeds from next October's 200-mile stock chassis race in Fairmount Park, to charity. To what particular purpose the funds so raised shall be devoted, will be decided upon at a subsequent meeting. Secretary Harbach has figured it out that if the sale of grand stand seats and parking spaces be placed in the hands of a committee of prominent society people, such as manage the annual charity ball, for instance, the proceeds of the race would reach $15,000 or $20,000. It was suggested that if the beneficiary selected should be the anti-tuberculosis league, the spectators, who would flock to the course by hundreds of thousands, as they did last year, would help along the fund by voluntary contributions, which, though small in themselves, would aggregate a substantial total. Collectors' booths, placed at each of the many entrances to the park, would attract the nickles, dimes, quarers and dollars of the public. Such is Secretary Harbach's idea.

The grand stand, which could be made as large as circumstances warranted, could be made to bring in at least half the large total mentioned, while the parking spaces would also sell for a substantial total, and the entrance fee could be placed at a figure which would insure handsome returns.

Given clear weather and a course patrolled and protected in the admirable manner which set a national standard for such affairs last year, and Quaker City society would put the seal of its approval on the affair, which would insure the race becoming an annual fixture.

NEWARK CLUB PLANS 1,000-MILE RACE

NEWARK, N. J., June 14—It is just barely possible that rivalry growing out of a tie in an endurance contest, and followed by a friendly challenge, may grow into a great big race of perhaps a thousand miles in length and appropriately staged by the New Jersey Automobile and Motor Club.

In the recent endurance run of the Mercer County Automobile Club at Trenton, both the Mercer, which is made in Trenton, and the Overland cars tied with perfect scores. The result of this was an extra run to determine the real winner. Not only was this not satisfactory to the car entrants and drivers, but it resulted in a challenge being sent and accepted.

The matter was laid before the board of trustees of the New Jersey Club at a monthly meeting, the upshot of which was that the contest committee was given power to act. Their first act was an application for a sanction from the A. A. A., and the second the selection and reservation of the mile race track at Long Beach. The date for the big event has not been settled definitely, but will be some time late in July or early in August, beginning on a Friday and continuing through to Saturday. On Saturday another track event, probably at ten or twenty-five miles or both, will be sandwiched in.

If the race is held at Long Branch, which now seems likely, the club will schedule a club run to the shore resort at that time, which will doubtless insure the success of the track race.

A 24-HOUR RACE AT BENNINGS

BALTIMORE, June 14—A 24-hour race meet will be conducted under the auspices of the Maryland Motor Car Racing Association July 16 and 17 on the mile circular track at Bennings, D. C. The event will be a twin city affair for the automobilists of this city and Washington.

The opening events will consist of two 5-mile, two 10-mile and two 25-mile races for stock cars. The 24-hour grind will start at half past eight o'clock, Friday night, and will be for stock cars of every description, both American and foreign make. This will be the first event of the kind held in this section of the country and the promoters believe that it is just the style of test that the people here are anxious for.

VICE-PRESIDENT SHERMAN WILL SET TIME

WASHINGTON, D. C., June 14—A sociability run to be given by the Washington *Times* on June 19 bids fair to be one of the most successful automobile affairs ever held in the national capital. The run will be to Great Falls, a picturesque spot on the upper Potomac River, which is reached via the famous conduit road. Secret time for making the trip will be set by Vice-President Sherman, who has frequently made the trip in his Peerless.

WHERE TRACK SPORT ATTRACTS

MONTREAL, June 14—Official announcement is made of the second annual automobile races under the auspices of the Automobile Club of Canada. The races will take place at Blue Bonnets race course, July 9 and 10, and the committee in charge of the races will at once complete arrangements to bring on the greatest auto racers the world has yet produced, including Christie, De Palma, Burman, Strang, Robertson, and others. A feature of this year's races will be the new car of Walter Christie, which he claims will smash all records. The car is 160-horsepower and has attained a speed of one mile in 27 seconds. Negotiations are being carried on to have F. J. Wagner, the starter of all the famous meets in America, including the Vanderbilt Cup races, to start the races here. The club is also endeavoring to secure an aeroplane, which will give demonstrations during each day of the races.

The committee appointed in charge of the races is: Clarence F. Smith, chairman; F. H. Anson, William Carruthers, and George A. McNamee, secretary-treasurer.

ATLANTA A MECCA NEXT NOVEMBER

SAVANNAH, GA., June 15—Having been obliged to postpone its three-day automobile race meet, Fritzgerald is now getting ready to have an endurance run to Atlanta, which will probably be held just before the opening of the automobile show in that city in November. The city has put up the sum of $1,000, to be awarded in the following manner to "best cars" and the "best roads": Five hundred dollars for the county offering the best roads between Fritzgerald and Atlanta, via Macon; $300 for the automobile making the best time during the run, and $200 to the second best.

Other cities that will have runs to Atlanta in November are: Albany, McRea, Dublin, and Savannah. Savannah has already offered $1,000 in cash prizes, and it is possible that each of the other cities will offer the same amount.

109 CONTESTANTS IN PRINCE HENRY TOUR

BERLIN, June 10—The contestants in the Prince Henry of Prussia automobile competition, which is being conducted under touring conditions, got away at five o'clock this morning from the Tempelhof road. One hundred and nine machines started at intervals of one minute.

Prince Henry came to the starting place in an automobile from Kiel. He did not remain, but went on to Gueben to observe the speed of the contestants on the way to Krossen. The entire course is 1,132 miles and will be covered in six stages. The stopping places are Breslau, Tatra, Budapest, Vienna, Salsburg and Munich.

NEW AUTOMOBILE CONCERN STARTS IN YORK

YORK, PA., June 14—Under the trade name of the Kline Kar, a new automobile will be produced in this city, manufactured by the B. C. K. Motor Car Company, the initials standing for Bailey, Carroll, and Kline. Application has been made for incorporation papers, naming the following as incorporators: S. E. Bailey, president, of Philadelphia, and of the York Carriage Company; vice-president, Joseph D. Carroll, of Fiss, Doerr & Carroll, of New York; secretary, J. C. Shutte, of S. E. Bailey & Company, Lancaster, Pa.; treasurer, George W. Ryan, York Carriage Company; designer and general manager, James A. Kline, formerly general manager of the York Motor Car Company. This concern has been formed as a result of the withdrawal of the interests held by Messrs. Bailey, Kline, and Shutte in the York Motor Car Company, the maker of Pullman automobiles.

A new factory has been built in the city, 300 by 50 feet in size, and to-day ground was broken for another building which will be 150 by 80 feet in size. About 300 men will be employed here, and the same number in the factory in Bath, N. Y., which has been purchased from the Kirkman Motor & Parts Company. The latter plant will be used by the new concern to make its engines, transmissions, rear construction, and other parts; leaving much of the machine work, the body building, finishing and shipping of complete cars to the York factory. Contracts are now being placed for materials with which to construct 500 automobiles, and Mr. Kline is completing designs for the cars.

STODDARD'S NEW CONCERN—THE COURIER

DAYTON, O., June 14—Inasmuch as the Dayton Motor Car Company of this city is working to the limit of its capacity to produce the Stoddard-Dayton automobiles, the officials of this concern have formed another one which will build a small car to sell for $1,000. The new organization will be called the Courier Car Company of Dayton, and its officials include C. G. Stoddard, president; H. J. Edwards, vice-president and designer of both cars; J. W. Stoddard, and a number of those connected with the Dayton Motor Car Company. The plant of the Kinsey Manufacturing Company, offering about 100,000 square feet of floor space, has been taken and machinery is now being installed. Work will commence about August 1, and inasmuch as both plants are near together, the official duties will be facilitated. The capital is $200,000.

The Courier will have a four-cylinder motor, of 3¾-inch bore and 4¼-inch stroke. It will be rated at 20-horsepower and will have a magneto. The transmission will be of the selective sliding gear type on the rear axle, the body will be a roadster or baby tonneau, and as stated the price will be $1,000. This will include full lamp equipment, and 3½-inch tires on 30-inch wheels. The plans and contracts for material call for an output of 1,000 cars.

AUTO ENGINEERS WILL MEET IN CHICAGO

NEW YORK, June 14—Chicago has been chosen as the meeting place for the midsummer session of the Society of Automobile Engineers, and the dates will be August 5, 6, and 7. This was decided upon at a recent meeting of the society council, and the dates selected so that they include that of the Algonquin hill climb, which the members may thus attend. From what Prof. Carpenter, chairman of the committee on papers, reported it appears that the discussions at the coming conclave will be of more value and general interest than those at any of the previous meetings. Those members of the council present were: Henry Hess, president; A. L. Riker and Thos. J. Fay, past presidents; Alexander Churchwood, secretary; A. H. Whiting, treasurer; H. M. Swetland, chairman entertainment committee; Prof. Rolla C. Carpenter, chairman committee on papers; B. D. Gray, and Henry G. Chatain, directors. Additional details of the meeting will be furnished at an early date.

WILLYS TO HEAD MILLION DOLLAR COMBINE

TOLEDO, O., June 14—Announcement has just been made that a million dollar company is shortly to be organized to bring about a consolidation of the various motor manufacturing concerns in which J. M. Willys, president of the Overland Automobile Company, is the chief figure. The company will form a holding company, which, it is stated, will be known as the Toledo Motor Car Company, and it will consist of a consolidation of the Pope Motor Car Company (recently purchased), the American Motor Car Sales Company, the Overland Automobile Company, and the Marion Motor Car Company, in all of which concerns Mr. Willys holds a controlling interest.

Bissell Company Will Make Electric Runabout

A jobbing company with F. E. Bissell of this city as president has just been formed for the purpose of handling a new electric runabout which is to be manufactured by the Bissell Electric Company of this city. The Bissell company at present handles only electric equipment of various kinds, but it has recently acquired patterns for a light electric which is to be placed on the market as both a low and medium priced machine.

CLAIM SERVICE IS NOT ECONOMICAL

WASHINGTON, D. C., June 14—The local post office authorities recently invited sealed bids for furnishing an automobile mail collection service. Seven hundred and seventy bids were received, and the announcement is now made that unless the Brush-Nichols Company, the present contractor for this service, makes a substantial reduction in the amount now paid for the service, its contract will not be renewed on June 30.

The Brush-Nichols Company is receiving $13,400 per year for furnishing three Brush cars with drivers, sixteen hours a day, in addition to which it is given, rental free, a garage estimated at $900 yearly. This service replaced ten foot collectors, whose combined salaries amounted to $10,000 per annum, and the postal authorities believe that the automobile service is not a sufficiently great improvement over that of the foot collectors to warrant paying the increased cost.

WARNER GEAR ABSORBS WARNER ELECTRIC

MUNCIE, IND., June 14—The Warner Gear Company, of this city, has just absorbed the Warner Electric Company, also of this place. The latter concern made control levers and emergency brakes which were marketed by the former, and as T. W. Warner was manager of both concerns, the transaction is in the nature of a consolidation. The Warner Gear Company will again increase its facilities, this time by 100 per cent, by new buildings and equipment. Building operations will begin within a few weeks. The concern employs 600 men.

THIS AUTO CALLED THE "SKIDDOODLER"

COLUMBUS, O., June 7—Because the application for licenses to operate automobiles in this State requires the name of the car to be given, J. Shrum, of this city, has designated his car as the "Skiddoodler." Inasmuch as he had constructed it himself of materials gathered or made by him, he could not name it by any of those applied by the manufacturers of autos. Therefore Mr. Shrum had to invent a name, and its number is "I."

APPERSON BROTHERS ENLARGING FACTORY

KOKOMO, IND., June 14—Additions of two three-story buildings are being made to the factory of Apperson Brothers in this city, and will be finished by the middle of August. These buildings will more than double the present size of the plant, and will give a capacity for 1910 of three times as many automobiles as have ever been made in any previous year.

SCHOOL TURNS OUT REAL CHAUFFEURS

Allurements of the profession of the chauffeur on the one hand, and of the desire for intimate knowledge of a newly purchased automobile on the other, have contributed primarily to the formation of automobile schools. Like the proverbial toadstools, a great many so-called places of learning arose in the earlier days of the auto interest, but these have disappeared on account of their laxity of management and curriculum, leaving several well established institutions of reliability. A school of the latter class has been recently organized in New York City by William H. Stewart, Jr., known as the Stewart Automobile Academy, and in general equipment and surroundings compares favorably with any of the best semi-technical schools of the country. With a corps of instructors who understand the automobile thoroughly from its practical side, as well as the theoretical, the students of this academy are given a course in practical operation of touring cars and roadsters. It is not the aim of any of the large institutions to give engineering courses or a deep technical knowledge of the cars, confining themselves to give a well-grounded insight into the whys and wherefores.

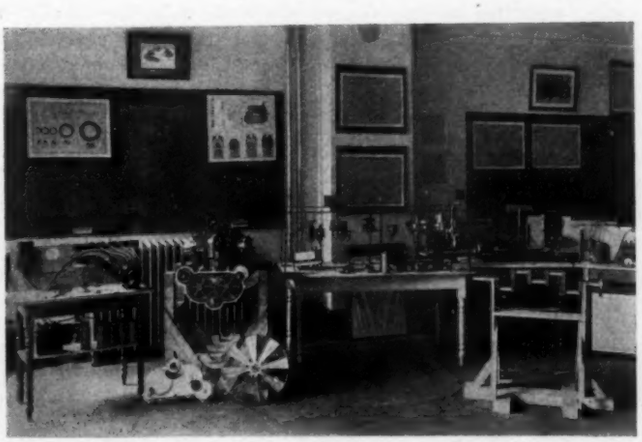
Stewart Automobile Academy Building

The demand for reliable chauffeurs continues, and from all over the country men are constantly coming to New York to be taught how to operate the increasing supply of autos. But the activities of the Stewart Academy are not confined to prospective chauffeurs, for a large number of owners have been enrolled, both men and women, who have recently purchased cars and have not cared to gain their knowledge through the hard lines of experience. The classes extend over a period of four or six weeks, according to the number of lessons taken during the week, and there are three sets of classes during the day: 9.30 a. m. to 12.30; 3 p. m. to 6; and 7.30 to 10.30 p. m. Special instruction is given for the women as best suits.

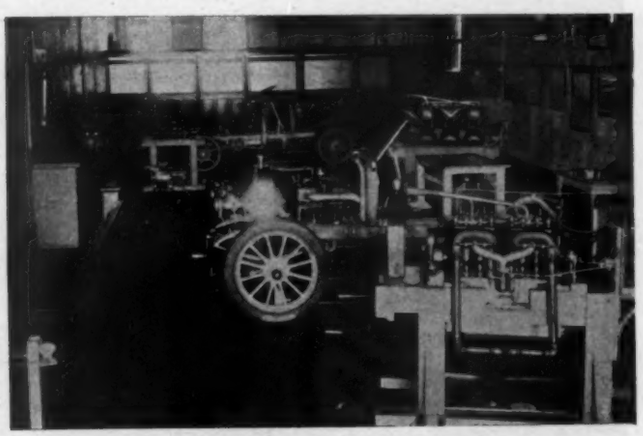
In the heart of the automobile district, on Fifty-fourth street, practically adjoining the Automobile Club of America, a building was secured last winter and thoroughly renovated, so that it became new to all purposes of the school. This structure is one of the largest occupied solely by an automobile school, having four floors and a basement, 25 by 100 feet in dimensions, giving 10,000 square feet of floor space, with an electric elevator large enough to lift the heaviest autos, wash stands, electric light and power, retiring rooms, offices, and of course, the laboratories. The windows are large and the result is that the entire building is bright and airy, and altogether suitable for use during the course of shop work or lectures.

Equipment of a modern nature is a prime requisite, and this important matter received ample consideration in fitting up the instruction rooms. Motors, transmissions, self-starting devices, ignition systems, carbureters, axles, springs, tires, and complete cars are included in the stock with which the embryonic autoist is made to understand. Blackboard lectures are also given, and the use of wall diagrams facilitate matters greatly, especially in regard to ignition requirements. When the student masters the intricate details of construction in the laboratories, road work is given and is not confined to running a machine through the parks or open streets, but right through the business and most congested parts of the city. For example, the last of the 12 driving lessons is to drive successfully a modern auto from the school to the Cortland street ferry and back, thus subjecting the operator to every conceivable test of city driving. The work on country roads is of minor consideration as compared to this. For this road work there are two machines used, a 30-horsepower Haynes and a 20-horsepower Locomobile. The former is a roadster, giving practice in the use of a car with jump spark ignition and shaft drive; and the latter is a touring car with make and break ignition and double side chain drive. On both of these cars there has been installed a double set of control pedals, brake and clutch pedals as usual for the driver, and a similar set for the instructor, so that in case of an emergency the car can be controlled by the latter.

In the laboratory there are several motors and other devices: a six-cylinder 1908 Winton motor; a 1908 Winton transmission; a 20-horsepower Locomobile motor in cross sectin for valve and igniter timing practice; a 1909 Oldsmobile four-cylinder motor; a 1908 Haynes chassis for practice upon chassis details, such as driving mechanism with the shaft drive, showing cardan joints, etc.; and a Locomobile chassis for similar work with a chain driven machine. The Winton and Oldsmobile motors are for actual running on stands, with the exhaust piped out of the room, and so arranged that various carbureters or ignition systems can be tried out. These integral parts of an automobile are of such nature as to be thoroughly representative, and a person who becomes familiar with them can be relied upon to understand any make. Each student is supplied with locker space, instruction books, and a kit of tools, so that there is no aspect of securing students for one fee and then subjecting them to other costs for supplies. In connection with the work in the laboratory, the lectures are carried on, with excellent ignition equipments for illustration. Carbureters are illustrated by popular types, and the same is the case with mechanical oilers. A



Corner of Stewart Laboratory, Displaying Wealth of Equipment



Another View, Showing Complete Chassis and a Few Motors

complete supply of various tires and rims is on hand to show the methods of the use of quick detachable, demountable, or regular clincher rims, repairing of inner tubes, etc.

When evident knowledge is instilled into the students a new tack is taken, that of trouble hunting, especially in regard to the finished motors. With an engine running regularly, a number of the class will be sent from the room, and some thing done to the engine which is likely to happen upon the road, and might puzzle the most expert. Water may be introduced into the carbureter, a valve or two may be fixed to stay open, the ignition wires may be mixed, the magneto timing deranged, or any one of a hundred different things done to confuse the autoist. The student must find this, and if he cannot do so alone, the instructor will aid him in following up certain lines of reasoning. Repair work is obtained on the upper floors of the Stewart building where outside trade is taken in, and the usual repair work done.

The officers of the Stewart Academy are: President, Richard E. Sause; vice-president and manager, William H. Stewart, Jr.; treasurer, Peter Cleary; secretary and assistant treasurer, Arthur V. Lyall; chairman of directors, F. S. Ferguson, Jr.; advertising manager, Harry S. Hall. The instructors are: Technical director, William H. Stewart, Jr., A.B., Rutgers College; internal combustion motors, C. T. Swart, M. E., Columbia; ignition, Stanley F. Bond, E.E., Columbia; motors and chassis, J. L. Del Rio, M.E., Columbia.

WHAT ONE OHIO CLUB IS DOING

COLUMBUS, O., June 14—The Columbus Automobile Club has started a department to furnish information to those who tour Ohio, with reference to the condition of the roads. The touring committee is receiving almost a dozen letters daily asking for information. The last consignment of road signs to cover Central Ohio has been received and will be erected as soon as possible.

CORBIN "TURTLE" DOES VERY WELL

At the recent Giant's Despair hill climb, the winner of the previous year and two-time holder of the Hollenback trophy, the Corbin car, was unable to compete because in practice the night before it turned turtle. As is well known to students of history, the turtle sometimes wins out, and this case was no exception to that rule, the Corbin making faster time in its only appearance of the day, in the last event, than did the winner of the Hollenback trophy race. Thus it was shown that had the car been able to compete therein, it would have repeated its victory of previous years, and finally won permanent possession of the cup.

Corbin Car Which Turned Over Without Breakage

A Modern Road Surface that Has Been Treated with Tarvia

ALLEVIATING THE DUST NUISANCE

Solutions of the dust problem in connection with automobile traffic, according to the report of Nelson P. Lewis, of the New York Board of Estimate and Apportionment, upon the recent International Road Congress in Paris may be divided into three classes. Of these the practicable one is to so construct and reconstruct the roads gradually, with binding materials which will make them proof against the disintegrating forces of high speed. The other two divisions considered are both impracticable, one being to require reduced speed and the other to build special roads all over the country. Mr. Lewis's report says in part: "It must be conceded that grit or stone dust of the same kind as that of which the road is built, or sand and mixtures of sandy loam and clay, are not suitable for roads as binding material, when freely used by automobiles. Only a perfectly homogeneous roadway, of which all the fine surface materials are protected against being scattered, is able to stand the passage of the extra rapid vehicles in use to-day. Either the roadbed must be so dense as to be unaffected, or a more vicious and elastic binding material must be used. It is quite generally believed that some form of bitumen is best adapted to this purpose."

Of the methods for reinforcing the binder of macadam roads, the French, English and American practice is frequently to select a prepared tar, no mention being made in the report of oils, soapy waters or other materials to suppress dust after it has been formed. It is recognized that the dust should be prevented from forming, if possible. In the United States a substance under the name of tarvia is available in three forms, suitable for various road conditions. One is very dense, sufficiently viscid to act as a binder, in the large voids of the 1 1-2-inch stone of a new highway; while for the top course, where the holes are smaller, a lighter article is manufactured; and for the minute pores of an old road, where there is to be no resurfacing, still lighter a fluid is supplied. In these cases the tarvia acts as a soft cement between the particles of stone, but, unlike cement in concrete, it does not become brittle, remaining resilient and waterproof.

Practice has seemed to indicate that under traffic a tarviated surface does not break up, but is rolled down and smoothed out, and consequently does not grind off any dust. At the same time dust which is blown upon the road adheres to it, is rolled into it and does not rise again. It is claimed that a single application of tarvia, in many instances, has produced dustless conditions for at least a season. Under light traffic a road so treated has remained dustless for upward of two years. In reporting upon the effect of tarvia on certain roads in the Borough of Richmond, Mr. Lewis says: "It has been demonstrated that at an increased cost, within the reach of any community, it is possible to secure a dustless road, incomparably better adapted than is ordinary macadam to automobile traffic."

GOODRICH TIRE EUROPEAN PLANT

PARIS, June 10—After France has sent her tiremakers across the Atlantic, the United States has replied by sending her experts to the old country. The first American tire factory in Europe is about to be opened near Paris by the B. F. Goodrich Company, of Akron, O. The firm has had a sales department in London for several years, and for the last two years has had a branch house in Paris, where French sizes were sold for French machines and American sizes kept in stock for the convenience of tourists. The president of the company, B. C. Work, is at present in Paris in connection with the projected factory, and expects to make a definite announcement regarding future plans within a few days. At the present time all tires are imported direct from Akron, the firm only maintaining a repair shop in addition to its selling branch near the Avenue de la Grande Armée. The Goodrich Company was the first American firm to sell tires in Europe, and will be the only one manufacturing on this side.

Havoline Oil European Plans for European Trade

It is more than probable that within a few weeks the Havoline Oil Company will enter on a business campaign with their products in France and other European countries. The agency for the company has recently been taken up by the American Auto Supply Company, and this week the manager of the company, A. E. Schwartz, sailed for New York with the object of arranging for a European business campaign on a large scale. The "Packard" brand of oil, now only offered at the Packard agency in Paris, will doubtless be on sale at all garages throughout Europe within a few weeks.

WELCH TO HAVE SMALLER CAR ALSO

DETROIT, June 14—The Welch Motor Car Company, long identified with the automobile industry as a producer of high-grade, high-priced cars, is about to enter a new field. Incidentally, Detroit's prominence in the automoble world is to be strengthened by the addition of another great factory.

W. C. Durant, of Flint, has purchased from the Olds Motor Works the property on Jefferson avenue it occupied when maintaining a Detroit factory. The purchase is understood to have been made for the Welch Motor Car Company, of Pontiac, which will next season put on the market a four-cylinder car of 24 or 30 horsepower, and selling around $3,000. An official of the Welch Company is authority for the statement that 1,500 of these cars will be made the first season, and that employment will be given to 1,000 men. Operations will begin about August 1.

It was at first rumored that the purchase had been made for the General Motors Company, which had also absorbed the Welch Motor Car Company. This is denied by officials of the latter corporation, who declare their concern will retain its identity, although the General Motors Company will market the lower-priced car. The new deal does not in any way affect the present Welch factory in Pontiac, which will continue to manufacture high-priced cars.

TO BUILD ELECTRICS IN WASHINGTON, D. C.

WASHINGTON, D. C., June 14—Electric delivery automobiles will shortly be manufactured in this city by the Pittsburgh Motor Vehicle Company. At a final meeting of the stockholders of this concern held recently, all the money necessary for the opening of a factory was subscribed, and the machinery is being purchased. It is expected that the plant will be in operation by the middle of July, although its site has not been announced. It is understood, however, that a location has been secured in the northwest part of city, within one block of Pennsylvania Avenue. The officers of the concern are: President, Arthur C. Moses; vice-president and general manager, W. H. Conant; treasurer, H. E. Leary; secretary, Stanton C. Peelle; directors, Byron S. Adams, R. P. Andrews, F. W. Bolgiano, Jules Demonet, A. F. Jorss and John J. Knox.

COLUMBIA MOTOR CAR COMPANY NEXT

HARTFORD, CONN., June 14—One more page has been turned in the affairs of the Electric Vehicle Company of this city, which has been in the hands of a receiver since December 10, 1907. The bondholders of the company through their legal representatives—Lucius F. Robinson, Albion B. Wilson, and Francis W. Cole, all of Hartford—to-day filed with the secretary of state a certificate of incorporation of a new concern to be known as the Columbia Motor Car Company of Hartford. The new company will take over and acquire all and any assets and property, real and personal, of every kind and description of the old concern, that is, the Electric Vehicle Company. The authorized capital stock of the Columbia Motor Car Company of Hartford is $48,000, divided into 480 shares at a par value of $100 each. Of the capital stock, $32,000 represents preferred stock or two-thirds of the capitalization, while the remaining one-third represents common stock.

Before the property of the Electric Vehicle Company can be acquired by the Columbia Motor Compay the necessary power to sell must be granted the receivers by the courts of New Jersey. As already mentioned in last week's issue, the receivers have applied for the right to sell to a committee of reorganization, and the court order is returnable on Tuesday.

Just what the policy of the new company will be is not known and nothing is said or can be learned of it at this time. However, it is the accepted belief that the manufacture of Columbia gasoline and electric models will be continued as heretofore by the receivers. At present the 29 hp. four-cylinder car is the only gasoline model built by the company. It is stated on good authority that next season the company will bring out a six-cylinder motor with the same stroke and bore as the present, but having a dual system of ignition.

The May report of H. W. Nuckols and H. M. Barrett, receivers of the company, shows sales during the month of $78,411.53. Of the cash receipts, $3,630.48 was realized from the Selden patent, and of the disbursements George B. Selden is credited with $37,729.55 and the Licensed Association with $3,395.20. The balance on hand June 1 was $169,599.50.

NEW WIRELESS SYSTEM OF UTILITY

AKRON, O., June 14—Ever since the incident of "Jack" Binns and the ill-fated *Republic*, the people have been greatly interested in any sort of "wireless." The latest, which has just been announced here will interest automobile owners, and particularly truck owners, more than the general public. This is a new form of tire just brought out by the B. F. Goodrich Company.

The new "wireless" tire is meeting with such favor among manufacturers of motor trucks, that the demand for them is already exceeding the ability of the huge Goodrich factory to supply them. The immediate reasons for its success, as set forth by the manufacturing company, are certain advantages which are enumerated as follows: First, increased mileage, because the tire will stand a maximum external abrasion without affecting its fastening to the wheel; second, freedom from repairs, because there is no hinging action of the rubber over internal metal fastenings; third, decreased cost per mile, as a result of the first two advantages. No complicated machinery is needed to apply these tires, and they may be readily put on to any wheel which has been equipped with a "wireless" rim.

The "wireless" dual type offers perhaps the most unique advantages. The improved construction makes it possible to set the twin tires on the rim in direct contact with each other. This reduces the space between the tires to the minimum necessary to prevent skidding and displacement of the rubber under stress. The narrower tread also reduces the necessity for offsetting the felloes on the drive side, and enables the load to be distributed centrally over the hub and spokes.

Marshalltown, Iowa.—Ingval & Rhodes have let contracts for the erection of a new garage which will cost $6,200, to be built of brick and cement, on East Lincoln street.

Hopewell Cutting Room, Cutting Machine in Action

TIRE CASES REQUIRE ACCURATE WORK

To manufacture cases for tires is no longer a hit-or-miss trade, but requires mathematical accuracy in the measurement of the goods, in the assembly, and finishing, in order that the protectors fit the tires perfectly. The Hopewell Brothers, of Cambridge, Mass., are among the largest makers of tire and lamp covers in the country, and they have shown the realization of the need for care in the producing of their output. The concern is a partnership between Frank B. Hopewell and Charles F. Hopewell, the former having invented the Hopewell tire case, and the latter having taken charge of its development. These men have patterned their cases from the rim dimensions entirely, for they claim that the measurements of tires vary as much as half an inch in outside diameter, thereby preventing a good fit.

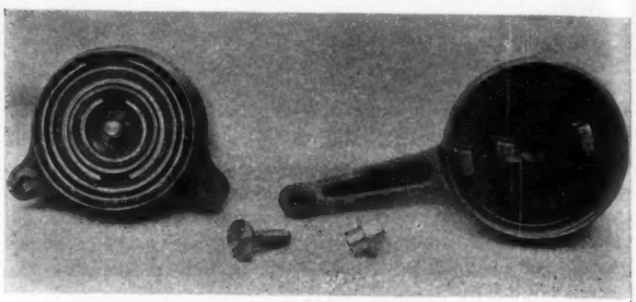
In the factory the accuracy of cutting is obtained by electric machines which run at 3,500 revolutions per minute, are capable of cutting 50 thicknesses of goods at one time, and they must do this within one-eighth of an inch of the exact measurement or the cuttings are not accepted by examiners. With two tables of electric cutters, 300 tire cases can be turned out at a time. After this operation the goods are taken to a machine room, which is equipped with 32 machines able to stitch very heavy material, and when the sewing is completed, the cases are given a rigid inspection. They are examined for workmanship, material, dimensions, and the circumferential measurement must be accurate to within one-quarter inch, or the case is rejected. Between 1,500 and 2,000 cases are carried in stock, all neatly packed in boxes. The springs which are used to make the cases fit snugly around the tires are all tested for elasticity and strength of joint, and are japanned before being used. Nearly a ton of these steel springs are used weekly, and several miles of goods are required. Lamp covers and other lines of goods are given the same care in material and workmanship as the Hopewell tire cases.

In the Machine Room Where Numberless Girls Sew Cases

The office system has been given great consideration by the company, so that at present by cross-indexing, and the use of card catalogues, the orders may be found instantly, and are thereby assured of more prompt and careful attention than when no definite rules are followed.

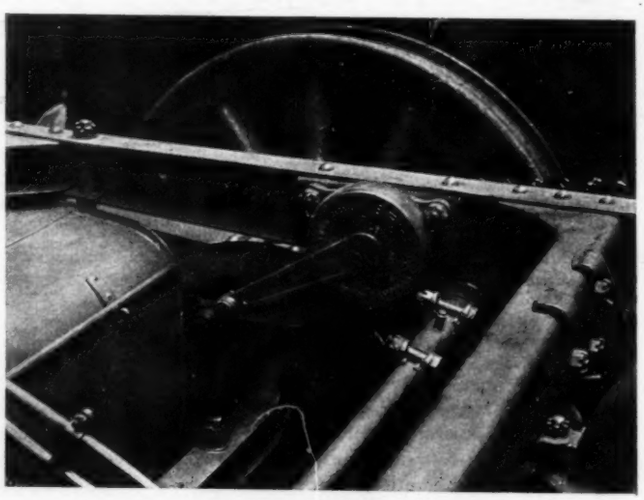
LATEST IN FRENCH SHOCK ABSORBERS

PARIS, June 10—An exceedingly simple and efficient type of shock absorber has just been placed on the French market under the title of The Sphinx, and adopted as a standard equipment for all cars of one of the leading French makes. The apparatus consists of two cylindrical boxes, one of which is bolted to the side member of the frame, and the other, with lever integral



Sphinx Shock Absorber Dismounted to Show Parts

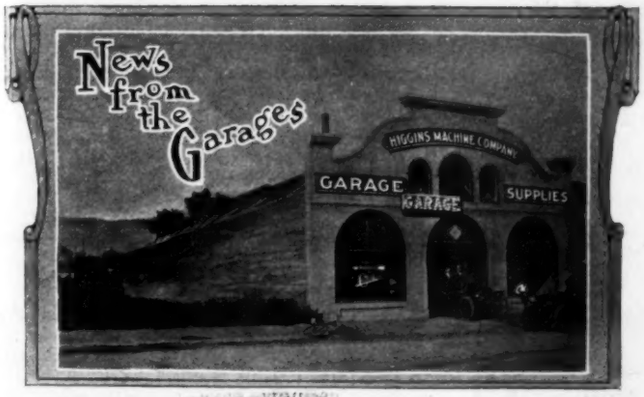
with it, forming a cover free to pivot round the fixed member; the two are attached by means of a simple type of bolt and nut forming the axis of the pivoting member. The fixed box contains three concentric rings, each one lined with felt and a steel spring forming eccentric. On the pivoting member are three



Fitted to the Rear Axle and Frame of a Car

wedge-shaped studs fitting into the grooves formed by the rings. When the car is at rest the studs are lodged in cut-away portions of the spring and felt lining with just sufficient play to prevent them coming into operation for slight oscillations of the chassis. An increased movement of the frame in relation to the axle causes the studs to be forced into the grooves formed by the rings, and the further they travel round the greater is the resistance, thus, of course, tending to eliminate violent oscillations of the chassis.

How to destroy battleships from airships is to be shown by the Wright Brothers when they finish the Government tests with their aeroplanes at Fort Myer next June. The outlines of a battleship will be made on the ground with chalk and projectiles will be dropped from the airship.



A Mission Type that Prevails in Southern California

GARAGE THAT HAS A NOTED CLIENTELE

SANTA BARBARA, CAL., June 11—The Higgins Machine Works Company, which conducts the principal garage in this city, lays claim to having housed the cars of more American notables during the past four months than any other garage in the country. To substantiate the claim, a list has been prepared of notables who have been at the garage with their cars since the first of the year, viz.:

E. H. Harriman, New York, president Southern Pacific Railway; E. P. Ripley, Chicago, president Santa Fe Railway; Louis F. Hill, St. Paul, Minn., president Great Northern Railway; James Hobart Moore, Chicago, president Rock Island system; John Hays Hammond, world famous mining engineer; W. F. Dreer, Philadelphia, leading seed merchant; George J. Haime, St. Louis, capitalist; D. D. Walker, St. Louis, capitalist; General Henry Strong, Chicago, former attorney general of Illinois; Penticost Mitchell, St. Paul, United States Steel Company; J. V. Silverson, New Ulm, Minn., president Eagle Rolling Mills; R. B. Merrill, Seattle lumberman; P. B. Stewart, Colorado Springs, capitalist, cousin of ex-President Roosevelt; Mrs. Nelson Morris, widow of the Chicago packer; A. Chester Beatty, New York capitalist and mining engineer; former United States Senator Baird; Judge W. G. Henshaw, Oakland; A. P. Knight, Denver, painter and personal friend of King Edward; Thaddeus Welch, one of America's greatest landscape painters; Stewart Edward White, author; Lloyd Osborn, author; Mrs. Robert Louis Stevenson, widow of the poet; William Miller Graham, oil king; C. B. Hale, New York capitalist; A. G. Spalding, Chicago capitalist; W. H. Cowles, Spokane capitalist, related to Mrs. Theodore Roosevelt; R. T. Crane, Chicago, president of Crane Company, steel and iron; W. E. Sloan, New York capitalist; Captain Huron Rock, Canadian capitalist; Louis F. Jones, New York capitalist; S. P. Calef, New York capitalist.

This list does not show all who have come here during the past months, but just such as have had their own cars at this garage.

A GARAGE OF ELIZABETHAN ARCHITECTURE

CINCINNATI, June 14—Different from the general run of garage buildings, the new garage of the Robert C. Crowthers Automobile Company, at the junction of Mitchell and Clinton Springs avenues, Rose Hill, Avondale, will be in keeping with the residential surroundings of that popular suburb. The property was leased by the Crowthers Company for a term of years and it is suitable for housing 25 to 30 automobiles. Mr. Crowthers will occupy one end as a residence and will reserve a fine large room separate from the garage proper for a salesroom. Royal Tourist and Elmore cars are handled in addition to doing a general garage business. The opening of this new place in the midst of Cincinnati's residence district has proven very popular with automobile owners, who were compelled previously to keep their cars at inconvenient distances.

ABOUT GARAGES THE COUNTRY OVER

Atlanta, Ga.—One of the largest vacant tracts of land in the business part of the city, on Auburn avenue between Courtland and Piedmont, has been sold to John M. Smith, a carriage manufacturer, upon which one and perhaps two garages will be erected. The lot has a front of 86 feet and it is 375 feet deep. There has been a tendency of late to make Auburn avenue the Automobile row, and already the Maxwell and Oldsmobile interests have located there.

Columbia, S. C.—At a total investment of about $18,000, E. A. Jenkins will within a short time begin the erection of a building for the Jenkins Automobile Company. A lot at the corner of Main and Richland streets has been purchased for $9,500 and upon it will be constructed a garage, sales room, and office structure, 40 feet wide and 120 feet deep, from which will be sold the White, Stoddard-Dayton, and Reo cars.

Los Angeles, Cal.—A one-story brick garage, 150 by 140 feet in size, is being built at the corner of Tenth and Olive streets. It has been leased to the Stoddard-Dayton Motor Company for a term of years. The interior finishings of the salesrooms, offices and other quarters will make the building one of the handsomest of its kind in this part of the country. It will cost about $15,000.

Portland, Me.—Excavations have been commenced for the building of a large garage and salesroom on Forest avenue. The building will be 80 by 133 feet, two stories in height, and will be completely equipped for a modern garage, with salesroom in front, and elevators permitting of the use of the basement for storage of cars. The second floor will be used as a skating rink.

Baltimore, Md.—At an expense of about $25,000, Michael Griffin will erect a three-story fireproof garage at Howard street and Park avenue. Plans have been drawn and the contract already awarded. The building will have a 98-foot front and a depth of 75, constructed entirely of brown stone, granite and concrete. The floors will be of tile work with fancy designs.

Blacksmith Shop Now a Garage—The trend of the country blacksmith toward being an automobile repair man is a recognizable one, and the town smithy has followed suit. In Fulton, N. Y., W. T. Fuller has sold the building which he has used for a blacksmith shop for many years and it will be converted into a garage.

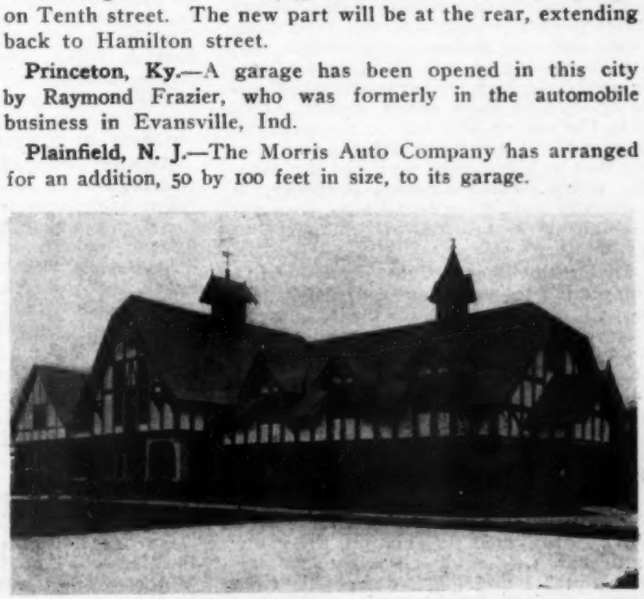
Lexington, Ky.—The Phoenix Garage has amended its articles of incorporation to change its name to the Phoenix Motor Car Company, with an increase of stock from $10,000 to $15,000. The articles are signed by A. L. Hamilton, V. K. Dodge and N. W. Dodge, directors.

Denver, Col.—The Denver Omnibus and Cab Company will have a new stable and garage, to be immediately erected at a cost of about $150,000. It will occupy half a block on East Eighteenth street, between Pearl and Washington streets.

Wilmington, Del.—The Wilmington Automobile Company has arranged to have an $8,500 addition made to its garage on Tenth street. The new part will be at the rear, extending back to Hamilton street.

Princeton, Ky.—A garage has been opened in this city by Raymond Frazier, who was formerly in the automobile business in Evansville, Ind.

Plainfield, N. J.—The Morris Auto Company has arranged for an addition, 50 by 100 feet in size, to its garage.



Rose Hill Garage, Cincinnati, a Southern Ohio Masterpiece

News in General

Winnipeggers Buy Many American Automobiles

Above is shown a single shipment of Franklin air-cooled cars recently received by the Winnipeg Garage, Ltd., which represents the Syracuse manufacturers throughout Manitoba and Saskatchewan. This is the second shipment of these cars in the year and shows plainly the growing use made of the automobile in this faraway and unfamiliar country.

Electric Welding Products Company Enlarges—Growing demand for the parts manufactured by the Electric Welding Products Company, of Cleveland, has necessitated an increase in its facilities. The factory was worked overtime all last winter, but was unable to catch up, so a large addition was built and has just been completed. This is a three-story structure, which will nearly double the capacity of the plant, and it will handle the gas engine and automobile parts, such as combination valves, solid and tubular propeller shafts, gear blanks, truss rods, grip control and brake levers, and special steel screws. About 20,000 square feet extra space were secured and it is stated that some new products will appear this year.

You Can't Steal That Car—It would make anybody peevish to have his car stolen; yet that is such a very easy thing to do with the ordinary automobile that the manufacturers of the Rambler have devised a lock, which from now on will be applied to their entire output. This is in the nature of a key in the gasoline pipe, without turning which the fuel may not flow to the engine, and, like the gasoline gauge, which Thomas B. Jeffery & Company are fitting to all cars, it is not in sight until wanted, and then is immediately useful.

In Truth, These Were Jewels—After completing the strenuous tour from Denver to Mexico City, in the Chalmers-Detroit "Flag to Flag" pathfinding car, reports William Knipper, two of the Diamond tires still contained the original air, one had suffered but one puncture, and the remaining tire but two. The weight carried on the 34 by 4-inch tires was 3,850 pounds, in view of which their performance was remarkable.

Quick Change Made with Doolittle Rim—In the three-day tour of the New York Auto Trade Association, the Interstate car was equipped with Doolittle demountable and quick detachable rims, and near the finish this equipment proved its worth. The car had a puncture at 136th street, just as another contestant passed it. The tire was changed in about two minutes, and at 103d street it caught and passed the other contestant.

New Auto Factory for Millville, N. J.—It is likely that an automobile manufacturing concern will shortly locate in Millville, N. J., according to statements of the local board of trade. The name of the concern is not announced, but it is said to have stated that should it be able to purchase three acres of ground at a reasonable figure it will locate there. Three property owners have offered to donate the land.

Carbureter Business Looking Up—The general improvement in business has extended to the automobile accessory manufacturers to such an extent as to require additional factory facilities. The latest to build an addition is the Kokomo, Ind., firm of Byrne, Kingston & Co., which has just contracted for the erection of a two-story brick building, 60 by 132 feet in size, to be devoted exclusively to Kingston carbureters.

Another Victory for New Departure Bearings—The recent victory of the Allen-Kingston car in its class events in the Dead Horse hill climb is recorded by the makers of New Departure ball bearings as another victory for those bearings, which are used in the A-K automobiles. This car made the fastest time of all gasoline stock cars in the meet, 1:07 4-5.

Belmont Car from Castleton, N. Y.—Automobiles to be sold under the trade name of Belmont are to be built by a company in Castleton, N. Y., of which H. H. Ingalls is president, and A. C. Cheeny, secretary and treasurer. The factory will be located upon the grounds of the A. C. Cheeny Piano Company.

Gearless Creditors File Bankruptcy Petition—The creditors of the Gearless Motor Car Company, of Rochester, N. Y., have filed a petition in bankruptcy against the concern in the United States Court at Buffalo. According to the petitioners the company has admitted its condition.

McCord Begins Factory Addition—Ground has been broken in Detroit by the McCord Manufacturing Company for a factory addition that will enlarge the present plant by 40,000 square feet. It will be ready for occupancy in 40 days and will nearly double the output of radiators, lubricators and gaskets.

TAXICABS AND TRANSIT

Automobile Transportation for the Igorrotes—Over a distance which formerly necessitated a trip of ten in the Philippines, from Manila to Baguio, automobiles now have a route which is covered in eleven hours. The government has expended $2,500,000 on the road and the postal department has placed in operation five cars, each carrying seven persons, mail and light baggage, between Baguio and Camp I. The former place has become a resort and many Manila residents have built houses there, the season lasting from March 1 to about June 15.

Montreal Hack Drivers Protest—Because horse-drawn, see-going hacks are much more comfortable than the atrocious taxicabs, the drivers of the city of Montreal have petitioned the police committee to prohibit the importation of the dangerous machines. A goodly number of signatures of the handlers of the reins have been affixed to the document, setting forth their objections, claiming, among other reasons, that the taxicabs make money only when running fast and that the streets are too narrow for speed.

Big Taxicab Concern to Start in New York—The Gotham Taxicab Company is preparing to start a large business in New York City, beginning with 50 cabs, on August 1, and gradually increasing that number. The plans have been made for a new style of cabs and the rates will be 30 cents for the first half mile and 10 cents for each quarter of a mile thereafter. The officials are: President, Edward J. Dowling; vice-president, John V. Levy; secretary-treasurer, S. L. Root.

Auto Line to Complete Texas Gap—A gap of 53 miles between two railroad

New Home of Empire Tires in Chicago

connections will probably be instituted between the towns of Mary Neal and Tennyson. The Orient railroad, it is reported, will start a train service between San Angelo and Tennyson, 20 miles out, and at the same time start a train between Sweetwater and Mary Neal, leaving a gap between Mary Neal and Tennyson which, during the month of June, will likely be covered by autos.

Autos Meet Trans-Atlantic Steamers—Combining the pleasures of a sea voyage with those of an overland trip in an automobile, reserved by means of the wireless telegraph, is a plan recently put into effect by the Compagnie Generale Transatlantique (French Line). Its fastest mail steamers may be met at Havre by De Dietrich automobiles for the run to Paris, a five-hour journey with a stop for luncheon at Rouen.

To Operate Cabs in Asbury Park—S. A. M. Thompson, who is the vice-president of a taxicab company, is looking for a suitable location in Asbury Park, N. J., for the erection of a taxicab garage or for securing one already built. The concern proposes to operate a large number of machines from the Jersey coast resort to neighboring towns.

Ironton, O.—An automobile line between Ironton and Proctorville will probably be established as soon as the authorities at Coal Grove repair a stretch of bad road. A fourteen-passenger 'bus will be used, owned by S. G. Griffith, of Huntington, and will make two round trips a day.

IN AND ABOUT THE AGENCIES

Chalmers-Detroit—The sales department of the Chalmers-Detroit Company announces the following agents, with whom contracts have been made to handle the 1910 Chalmers-Detroit: Los Angeles, Cal., Western Motor Car Company; Hutchinson, Kan., Taylor Motor Company; Sioux City, Ia., Wetmore & Rogers Auto Company; Baltimore, Md., Zell Motor Car Company; Cincinnati, O., J. H. Ratliff Auto Company; Chicago, Levy & Hipple Motor Company; Zanesville, O., C. A. Fritz; Savannah, Ga., T. A. Bryson; Hastings, Neb., Stitt-Dillon Motor Company; Catlettsburg, Ky., O. C. Magann.

Firestone Tire and Rubber Company—The new Cleveland Firestone branch, located at 1918-1922 Euclid avenue, is one of the handsomest establishments along that city's famous Automobile Row. A unique characteristic of the new store is

Handsome Firestone Store in Cleveland

the private garage in the rear that will accommodate three cars, where motor truck or pneumatic automobile tires may be changed under shelter.

Empire Tire Company—The Chicago branch, of which E. B. McKay is manager, has been moved to 1305 Michigan avenue, from 20 LaSalle street, in order to facilitate the demands of the company's rapidly growing business. As will be seen by the illustration on the opposite page, the building is commodious and well adapted to the needs of a live and up-to-date concern.

PERSONAL TRADE MENTION

Arthur L. Banker, a pioneer automobile agent of Pittsburgh, Pa., has returned to the selling business as sales manager of the Banker Brothers Company, handling the Chalmers-Detroit and Hudson cars. About six months ago he left this concern to organize a wind shield company to use his patents, known as the Banker wind shields. A number of the large manufacturers have ordered this equipment for the coming season, and the Pierce-Arrow Company will manufacture 1,200 under the Banker patents for 1910.

Puller Harper, of Pittsburgh, will shortly enter the automobile business on his own account in New York City. He has been in the same business in this city lately and was formerly connected with the Westinghouse Company at East Pittsburgh.

T. W. Warner, general manager Warner Gear Company, Muncie, Ind., sails for a two months' trip in Europe June 24, on the Hamburg-American liner Graf Waldersee. During his absence Ray P. Johnson, treasurer, will have the active management of the plants.

David Bruce Brown, the amateur autoist who has broken many records this season at the wheel of the 120-horsepower Benz, will sail on Saturday for Europe. His trip is a pleasure one, and he will visit a number of the large automobile factories.

Orlando F. Weber has been appointed manager of the Chicago branch of the Palmer & Singer Company. Mr. Weber was a former cycling champion and has been connected with the Pope interests.

Frederic Thomas Bailey, familiarly known as "Harris Oil Bailey," has issued cards announcing the birth of Frederic Thomas Bailey, III, at Lake Forest, Ill., on June 2.

RECENT BUSINESS CHANGES

Kokomo Rubber Sale Off—Grafton Johnson, the Greenwood, Ind., capitalist who put up $25,000 as an option on the plant of the Kokomo Rubber Company, Kokomo, Ind., failed to pay the required $725,000 additional before his option expired, and as a consequence the rubber company paid its stockholders an extra dividend.

Kirkham Changes—Control of the Kirkham Motor Manufacturing Company, Bath, N. Y., was recently changed, when S. E. Bailey, of Philadelphia; James A. Kline, of York, and Joseph D. Carroll, of New York City, obtained a majority of the stock.

NEW AGENCIES ESTABLISHED

Interstate: Harrisburg, Pa.—Motor Vehicle Company, for central Pennsylvania, in addition to the Jackson.

Regal: Atlanta, Ga.—A. S. Allen, 102 North Pryor street.

Regal: Springfield, O.—E. D. Valentine, King Garage.

Studebaker: East Orange, N. J.—Herbert E. Listman.

RECENT INCORPORATIONS

Capital City Auto Company, Austin, Tex.—Capital $7,500. To operate taxicabs, maintain garage, and deal in automobiles and accessories. President, Pierre Bremond; vice-president, E. H. Perry; secretary and treasurer, R. M. Thomson, Jr., agent for the Pierce-Arrow, Oldsmobile, and Oakland.

Couple-Gear Company of New York, New York—Capital $50,000. To manufacture motor vehicles, electric and other motors, cars, carriages, and vehicles. Incorporators: W. H. Kennard, F. B. King, Howard Greene.

Cleveland, Beck & Layman Motor Corporation, New York—Capital $8,600. To manufacture motor boats, vehicles, motors, cycles, etc. Incorporators: Chauncey Cleveland, A. L. Beck, H. B. Layman.

Tobin Whichway Signal Company, New York—Capital $300,000. To manufacture automobile supplies, lamps, signals, etc. Incorporators: W. M. Wherry, Jr., C. A. Brooks, Frances Murphy.

Walden W. Shaw Auto Livery Company, Chicago—Capital $300,000. To manufacture and deal in automobiles and other motor vehicles. Incorporators: E. N. D'Ancona, N. E. Dugan, A. J. Pflaum.

Newcomb Engine Company, Harrison, N. Y.—Capital $200,000. To manufacture motors, engines, automobiles, boats, launches, etc. Incorporators: W. B. Thompson, O. A. Hack, E. C. Chamberlain.

Mercer Automobile Company, Trenton, N. J.—Capital $500,000. To manufacture automobiles, wagons, etc. Incorporators: F. W. Roebling, A. R. Kuser, J. L. Kuser.

STEWART TREBLES PLANT

About ninety days ago a large addition to the factory of the Stewart & Clark Mfg. Co., Chicago, was completed, and now work has been started on an addition that will treble the present size of

How the Enlarged Stewart Plant Will Look

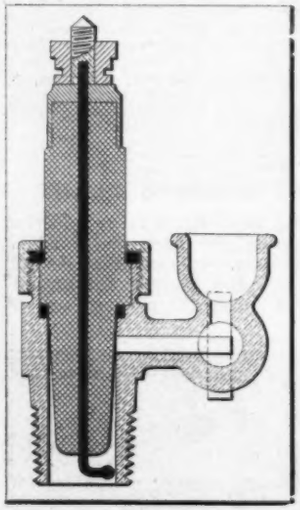
the plant, with a corresponding increase in capacity. Demands for the Stewart Multipolar speedometer have been so pressing that, although the present capacity of the plant has been taxed to its utmost, it has been almost an impossible task to fill orders. The company will be in excellent shape to handle the volume of 1910 business expeditiously, and the illustration shows how the factory will look when the new addition is completed.

RECENT PUBLICATIONS

Harry S. Houpt Company, New York—Illustrative of Herreshoff automobiles, "the smart, light cob of motor cars," the Harry S. Houpt Company, of New York City, has recently issued one of the most attractive catalogues seen this year. The frontispiece is water color reproduction, which sets off the front of a Herreshoff car to advantage in an outdoor picture, and the two photographs of the cars, touring and roadster, are examples in their line. The wording of the matter in the booklet is altogether pleasing and apt to be read because of interest, even by a casual observer. The reasons for the manufacturing of a small car to take the place of large expensive ones in city or suburban service is well brought out, as are also the claims which can be made for Herreshoff construction as represented in automobile engine and motor boat design. The byword of the early announcements, "correct interrelation of parts," is amplified, detailing the theories used in the design of the small auto. The specifications are placed in an easily read tabulated form, and the motor, transmission, axles, brakes, steering gear, and other important particulars illustrated with wash drawings.

Information for Auto Users

Combination Plug and Relief Cock—Many an autoist has "cussed" his engine because the construction was such as to require the removal of the spark plugs, when priming was in order. This necessity is obviated by a new plug, which carries on one side of the stone a large opening leading to a regular relief cock. The latter does double duty in that, aside from use as a compression relief and priming cock, its use when the engine is running cleans off the sparking points. This is effected by so shaping the circular opening leading to the outer air through the cock that the gases from the cylinder must pass over the points. As these gases are always under high pressure, the points are effectually cleaned off. The use of this plug also adds to the ease with which misfiring cylinders may be detected. It is made by the Comet Electrical Mfg. Co., Detroit, Mich., and is aptly named the All-In-One spark plug. Up to date it has been used on a number of racing motor boats on the Great Lakes with the best of success.

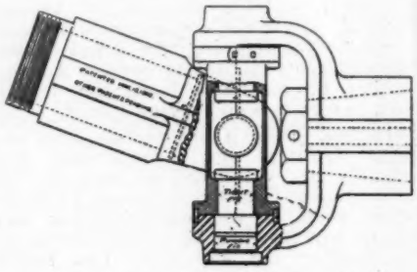


ALL-IN-ONE SPARK PLUG.

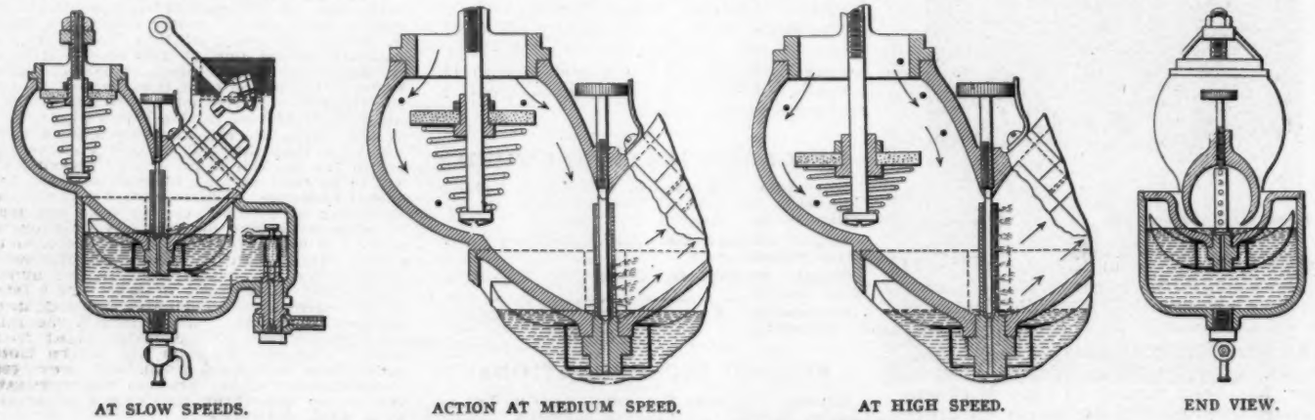
A Decidedly Different Carbureter—Since the birth of the automobile there have been attempts without number to solve the problem of carburetion, and it is not solved yet. A recently brought-out device introduces some new features which are of great interest, as being very practical, as well as novel. In the Bennett carbureter, made by the Wilcox-Bennett Carbureter Company, Minneapolis, Minn., the variation from the standard lies in the substitution of a standpipe for the ordinary spray nozzle. This standpipe has a large number of holes drilled along the sides, which, as set in the actual device, are vertical. Thus, when the running speed is very low, and the engine suction correspondingly weak, fuel is drawn but from one of the holes, the bottom one. As the speed increases and with it the suction, gasoline is drawn from more holes than the first, the number depending upon the pull of the motor. This effect increases until the greatest possible suction may be drawing from every one of the numerous holes, and in this way the engine is getting the maximum amount of fuel needed at that speed. The air control is through an auxiliary air valve, its action being controlled by a spring, the tension of which may be regulated from the outside without disturbing any other part. The number of holes which will be contributing fuel at the highest speed is, of course, controlled by the amount of gasoline allowed to enter the standpipe, and this may be changed or regulated at will by means of the needle valve head. This is milled and projects above the central part of the carbureter body, so as to be very accessible.

New Asbestos Brake Lining—Now that automobile brakes are receiving the attention which they deserve at the hands of designers, there is more demand for suitable brake lining material. One of these, possessing much of worth, is the product of the Empire Tire Company, Trenton, N. J. This material is composed of a central or major portion of asbestos, covered with an envelope of rubber. The fiber used is long, staple asbestos, closely woven, this having the high wear-resisting qualities which the short and coarse staple cannot have. The rubber coating, having no wear-resisting qualities, is made as thin as possible, its function being simply that of a holder which retains the asbestos together. By putting this rubber on the asbestos under an hydraulic vulcanizing pressure of close to 2,000 pounds per square inch, a very thin coating is insured. In this manner the percentage of useful material to total is made very large and the buyer gets the most for his money. The maker's confidence in the product is shown best in the test which is given. This is to select two or more samples of equal width and thickness, weigh, burn, and weigh the residue. The difference in weight shows the useless material, as asbestos will not burn.

Simple and Strong Universal Joint—Simplicity is always desirable, and more than usually so in a part which is subject to varying and severe strains. Thus the new universal joint put out by the Mutual Machine Company, Hartford, Conn., is particularly meritorious because of its unusual simplicity. The parts of this joint are all drop-forgings from a high grade of steel. The design is such that no cotter pins, nuts, bolts, screws, or other sources of trouble are used in the construction. In this way not only does simplicity make for natural superiority and increased strength, but the owner and driver is assured more peace of mind, in that he does not have to think of the parts which might come loose and rattle off. The interior of the main block is filled with grease, the opening being large enough to carry a season's supply, another point for the driver. These joints are made in all sizes for shaft diameters from 3-8 inch up to 1 1-2 inch, advancing by eighths, and on up to 4 inches and more, all sizes above 2 inches, however, being made to order only. The cut, part of which is in section, shows the interior construction of the joint. The space for the grease packing is particularly noticeable, as is also the method of fitting the joint together, and the retaining ring which holds it.



MUTUAL SIMPLE UNIVERSAL JOINT.



AT SLOW SPEEDS. ACTION AT MEDIUM SPEED. AT HIGH SPEED. END VIEW.

BENNETT CARBURETER IN SECTION, SHOWING ACTION AT DIFFERENT SPEEDS.